ADITI AKARSH

1BM19CS007

OOJ LAB

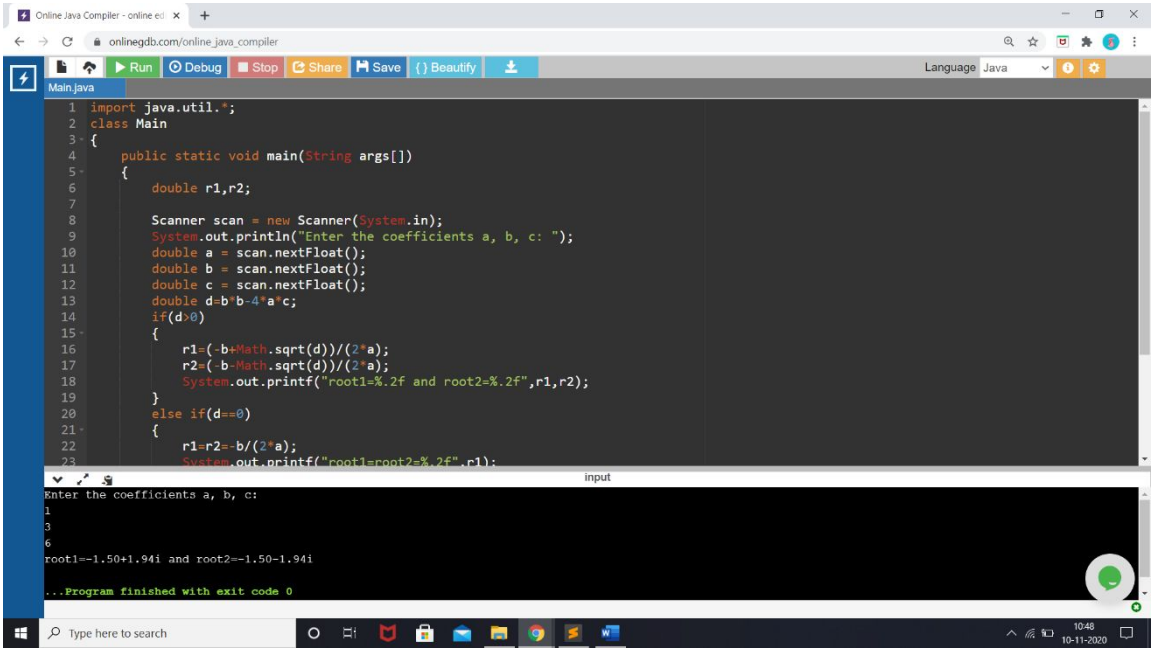
LAB PROGRAMS

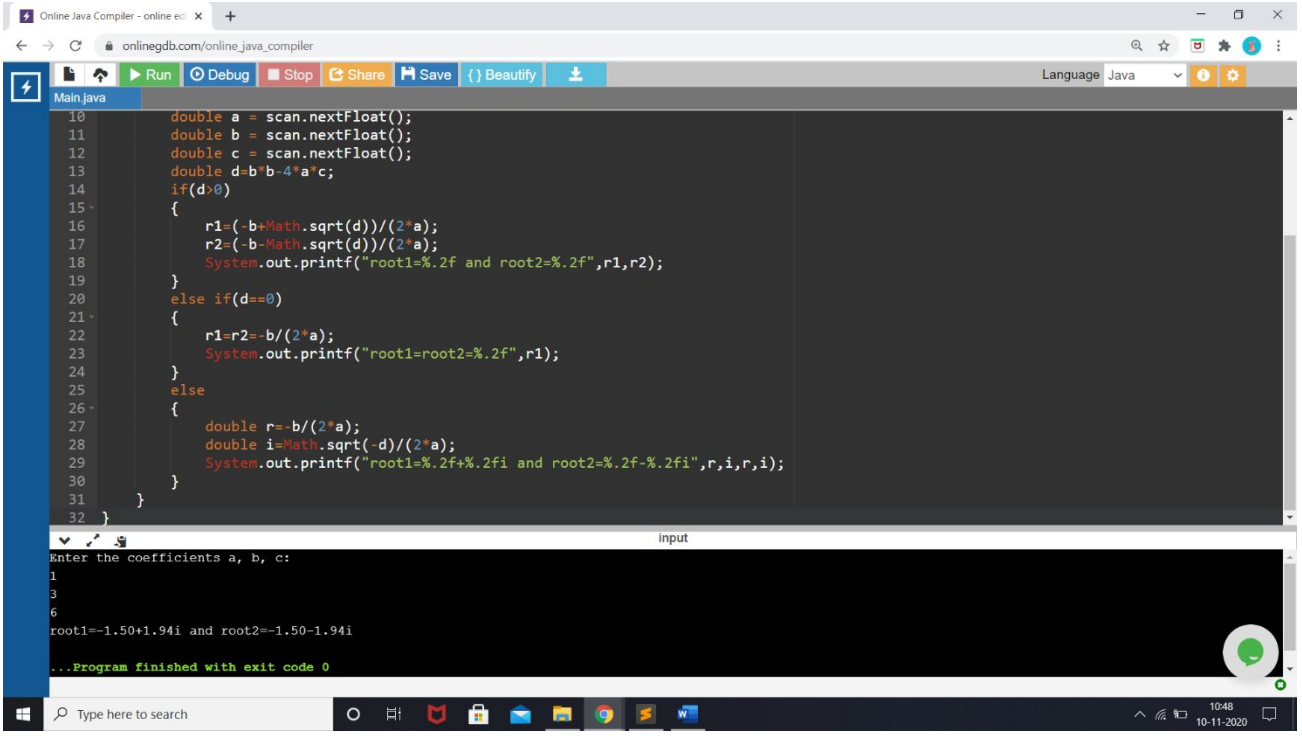
LAB 1

Develop a Java program that prints all real solutions to the quadratic equation ax2 +bx+c = 0.Read in a, b, c and use the quadratic formula. If the discriminate b2-4ac is negative, display a message stating that there are no real solutions.

```
import java.util.*;
class Main
{
   public static void main(String args[])
   {
      double r1,r2;

      Scanner scan = new Scanner(System.in);
      System.out.println("Enter the coefficients a, b, c: ");
      double a = scan.nextFloat();
      double b = scan.nextFloat();
      double c = scan.nextFloat();
      double d=b*b-4*a*c;
      if(d>0)
      {
         r1=(-b+Math.sqrt(d))/(2*a);
         r2=(-b-Math.sqrt(d))/(2*a);
         System.out.printf("root1=%.2f and root2=%.2f",r1,r2);
      }
      else if(d==0)
      {
         r1=r2=-b/(2*a);
         System.out.printf("root1=root2=%.2f",r1);
      }
      else
      {
         double r=-b/(2*a);
         double i=Math.sqrt(-d)/(2*a);
         System.out.printf("root1=%.2f+%.2fi and root2=%.2f-%.2fi",r,i,r,i);
      }
   }
}
```

OUTPUT:


Online Java Compiler - online ed
onlinegdb.com/online_java_compiler
Run
Debug
Stop
Share
Save
{ } Beautify
Language Java
Main.java
import java.util.*;
class Main
{
public static void main(String args[])
{
double r1,r2;
Scanner scan = new Scanner(System.in);
System.out.println("Enter the coefficients a, b, c: ");
double a = scan.nextFloat();
double b = scan.nextFloat();
double c = scan.nextFloat();
double d=b*b-4*a*c;
if(d>0)
{
r1=(-b+Math.sqrt(d))/(2*a);
r2=(-b-Math.sqrt(d))/(2*a);
System.out.printf("root1=%.2f and root2=%.2f",r1,r2);
}
else if(d==0)
{
r1=r2=-b/(2*a);
input
Enter the coefficients a, b, c:
1
3
6
root1=-1.50+1.94i and root2=-1.50-1.94i
...Program finished with exit code 0
Type here to search
10:48
10-11-2020


Online Java Compiler - online ed
onlinegdb.com/online_java_compiler
Run
Debug
Stop
Share
Save
{ } Beautify
Language Java
Main.java
double a = scan.nextFloat();
double b = scan.nextFloat();
double c = scan.nextFloat();
double d=b*b-4*a*c;
if(d>0)
{
r1=(-b+Math.sqrt(d))/(2*a);
r2=(-b-Math.sqrt(d))/(2*a);
System.out.printf("root1=%.2f and root2=%.2f",r1,r2);
}
else if(d==0)
{
r1=r2=-b/(2*a);
System.out.printf("root1=root2=%.2f",r1);
}
else
{
double r=-b/(2*a);
double i=Math.sqrt(-d)/(2*a);
System.out.printf("root1=%.2f+%.2fi and root2=%.2f-%.2fi",r,i,r,i);
}
}
}
input
Enter the coefficients a, b, c:
1
3
6
root1=-1.50+1.94i and root2=-1.50-1.94i
...Program finished with exit code 0
Type here to search
10:48
10-11-2020

WRITEUP:

Expt. No. Lab Program 1 Date

Page No.

```
# import java.util.*
class Main
{
    public static void main (String args[])
    {
        double r1, r2;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter the coefficients a, b, c:");
        double a = scan.nextFloat();
        double b = scan.nextFloat();
        double c = scan.nextFloat();
        double d = (b*b)-(4*a*c);
        if (d>0)
        {
            r1 = (-b+Math.sqrt(d))/(2*a);
            r2 = (-b+Math.sqrt(d))/(2*a);
            System.out.printf("root1 = %.2f and
            root2 = %.2f", r1, r2);
        }
        else if (d==0)
        { r1=r2 = b/(2*a);
        system.out.printf("root1 = root2 = %f", r1);
        }
        else
        { double i = Math.sqrt(-d)/(2*a);
        double r = b/(2*a);
        System.out.printf("root1 = %.2f+%.2fi
        and root2 = %.2f-%.2fi", r, i, r, i);
    }
}
```

Teacher's Signature

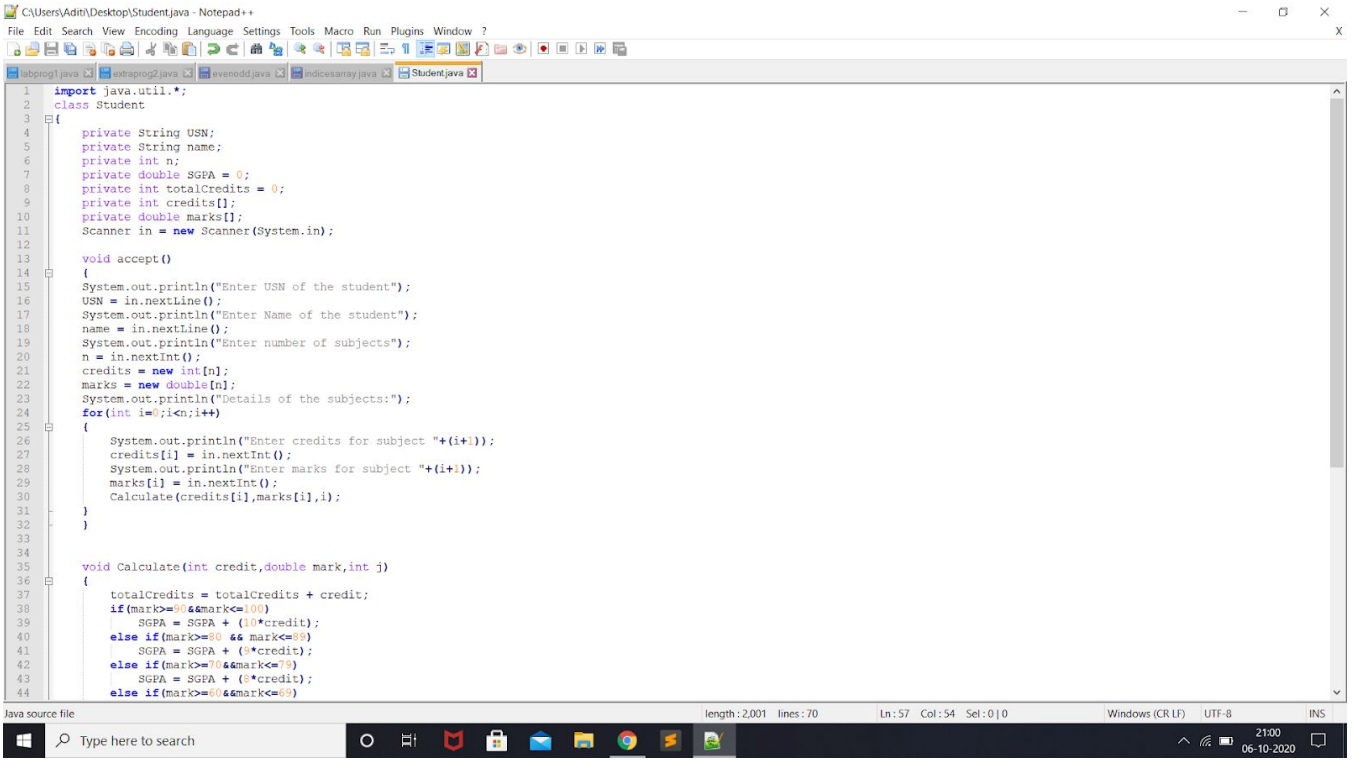
LAB 2

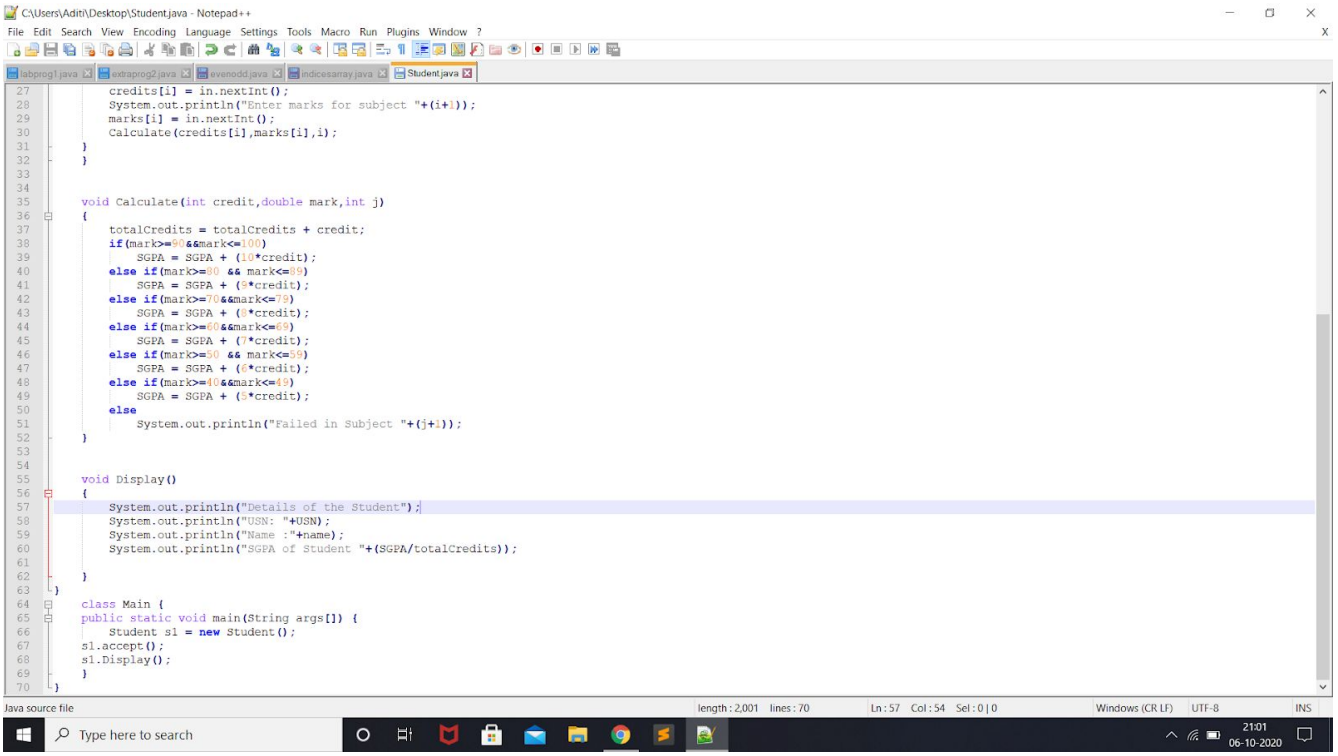
Develop a Java program to create a class Student with members usn, name, an arraycredits and an array marks. Include methods to accept and display details and a method to calculate SGPA of a student.

```
import java.util.*;
class Student {
 private String usn;
 private String name;
 private int n;
    private int credits[] = new int[n];
 private int marks[] = new int[n];


 void accept()
 {
  Scanner s=new Scanner(System.in);
  System.out.println("Enter student details");
  System.out.println("USN:");
  usn=s.nextLine();
  System.out.println("Name:");
  name=s.nextLine();
  System.out.println("Enter the number of subjects:");
  n=s.nextInt();
  System.out.println("Enter credits and marks attained by the student in each subject");
  for(int i=0;i<n;i++)
  {
   credits[i]=s.nextInt();
   marks[i]=s.nextInt();
  }
 }
 void display()
 {
  System.out.println("Student details:");
  System.out.println("USN:"+usn);
  System.out.println("Name:"+name);
  System.out.println("Marks in each subject:");
  for(int i=0;i<n;i++)
  {
   System.out.println("Subject "+(i+1)+":"+marks[i]);
  }
 }
 double calc()
 {
  int tcp=0,tc=0;
```

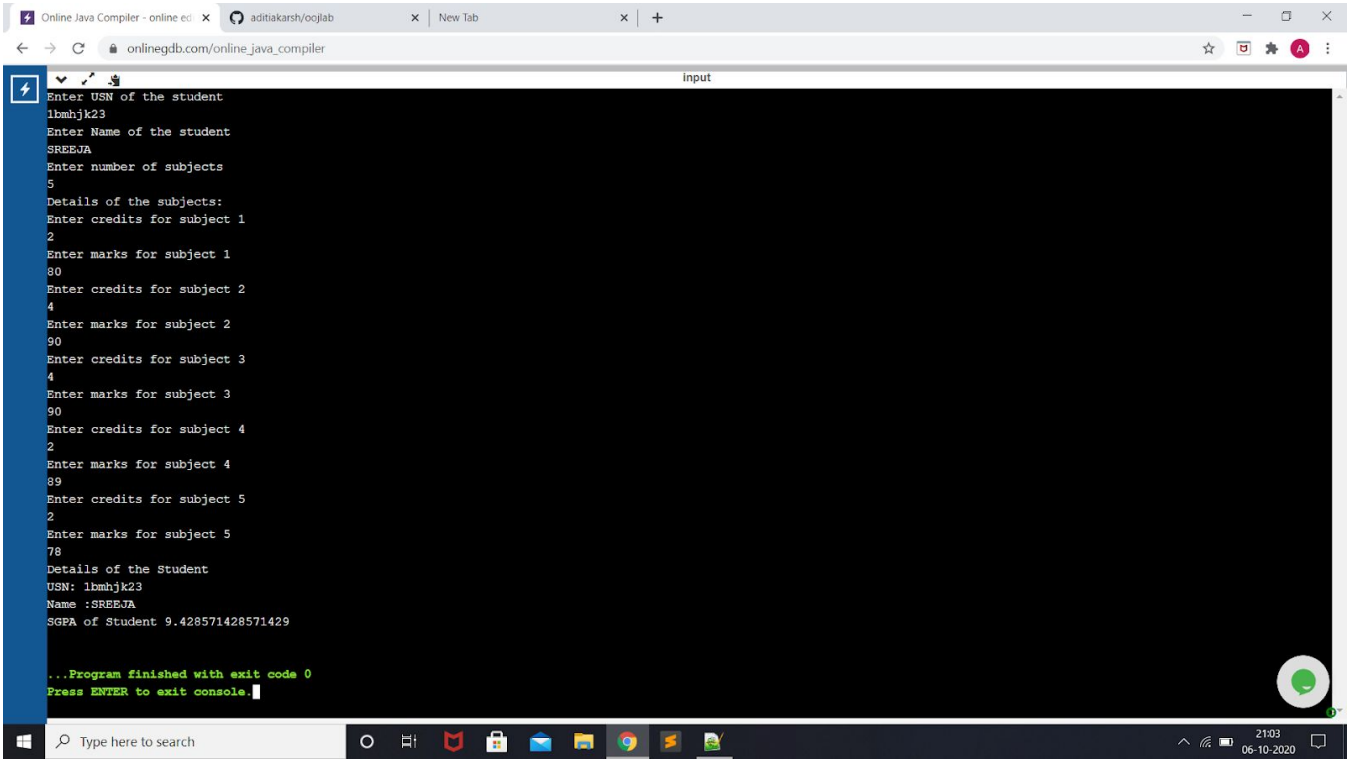
```
 for(int i=0;i<n;i++)
 {
  tc=tc+credits[i];
  if(marks[i]>=40)
  {
  tcp=tcp+(((marks[i]/10)+1)*credits[i]);
  }
 }
 return (double)tcp/tc;
}
}
 class Main
 {

 public static void main(String args[]) {
  Student s1=new Student();
  s1.accept();
  s1.display();
  System.out.println("SGPA: "+s1.calc());
 }
}
```

OUTPUT:





```
C:\Users\Aditi\Desktop\Student.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
labprog1.java | extraprog2.java | evenodd.java | indicesarray.java | Student.java

        credits[i] = in.nextInt();
        System.out.println("Enter marks for subject "+(i+1));
        marks[i] = in.nextInt();
        Calculate(credits[i],marks[i],i);
    }
    }


    void Calculate(int credit,double mark,int j)
    {
        totalCredits = totalCredits + credit;
        if(mark>=90&&mark<=100)
            SGPA = SGPA + (10*credit);
        else if(mark>=80 && mark<=89)
            SGPA = SGPA + (9*credit);
        else if(mark>=70&&mark<=79)
            SGPA = SGPA + (8*credit);
        else if(mark>=60&&mark<=69)
            SGPA = SGPA + (7*credit);
        else if(mark>=50 && mark<=59)
            SGPA = SGPA + (6*credit);
        else if(mark>=40&&mark<=49)
            SGPA = SGPA + (5*credit);
        else
            System.out.println("Failed in Subject "+(j+1));
    }


    void Display()
    {
        System.out.println("Details of the Student");
        System.out.println("USN: "+USN);
        System.out.println("Name :"+name);
        System.out.println("SGPA of Student "+(SGPA/totalCredits));

    }
}
    class Main {
    public static void main(String args[]) {
        Student s1 = new Student();
    s1.accept();
    s1.Display();
    }
}

Java source file   length : 2,001   lines : 70   Ln : 57   Col : 54   Sel : 0 | 0   Windows (CR LF)   UTF-8   INS
Type here to search   21:01   06-10-2020
```



```
Online Java Compiler - online ed   aditiakarsh/ooplab   New Tab
onlinegdb.com/online_java_compiler
input
Enter USN of the student
1bmhjk23
Enter Name of the student
SREEJA
Enter number of subjects
5
Details of the subjects:
Enter credits for subject 1
2
Enter marks for subject 1
80
Enter credits for subject 2
4
Enter marks for subject 2
90
Enter credits for subject 3
4
Enter marks for subject 3
90
Enter credits for subject 4
2
Enter marks for subject 4
89
Enter credits for subject 5
2
Enter marks for subject 5
78
Details of the Student
USN: 1bmhjk23
Name :SREEJA
SGPA of Student 9.428571428571429


...Program finished with exit code 0
Press ENTER to exit console.
Type here to search   21:03   06-10-2020
```

WRITEUP:

1BM19CS007

Expt. No. Lab Program 2 Date 6/10/2020

Page No.

```
import java.util.*;
class Student
{
  private String USN;
  private String name;
  private int n;
  private double SGPA = 0;
  private int totalCredits = 0;
  private int credits[];
  private double marks[];
  Scanner in = new Scanner(System.in);
  void accept ()
  { System.out.println("Enter USN");
    USN = in.nextline();
    System.out.println("Enter Name");
    name = in.nextline();
    System.out.println("Enter number of subjects");
    n = in.nextInt();
    credits = new int[n];
    marks = new double[n];
    System.out.println("Details of the subjects:");
    for (int i=0; i<n; i++)
    {
      System.out.println("Enter credits"+(i+1));
      credits[i] = in.nextInt();
      Calculate(credits[i], marks[i], i);
    }
}
```

Teacher's Signature

1BM19CS007

Expt. No. Lab Program2 Date 6/10/2020

Page No.

```
void calculate(int credit, double mark, int j)
{ totalcredits = totalCredits+credit;
  if (mark >=90 && mark <=100)
      SGPA = SGPA+(10*credit);
  else if (mark >=80 && mark <=89)
      SGPA = SGPA+(9*credit);
  else if (mark >=70 && mark <=79)
      SGPA = SGPA+(8*credit);
  else if (mark >40 && mark <=49)
      SGPA = SGPA+(5*credit)
  else
      System.out.println("Failed"+(j+1));
}
void Display()
{ System.out.println("Details:");
  System.out.println("USN:"+USN);
  System.out.println("Name:"+Name);
  System.out.println("SGPA"+(SGPA/totalcredits));
}
}
class Main{
public static void main(String args[]){
  Student s1=new student();
  s1.accept();
  s1.Display();
}
}
```

Teacher's Signature _____

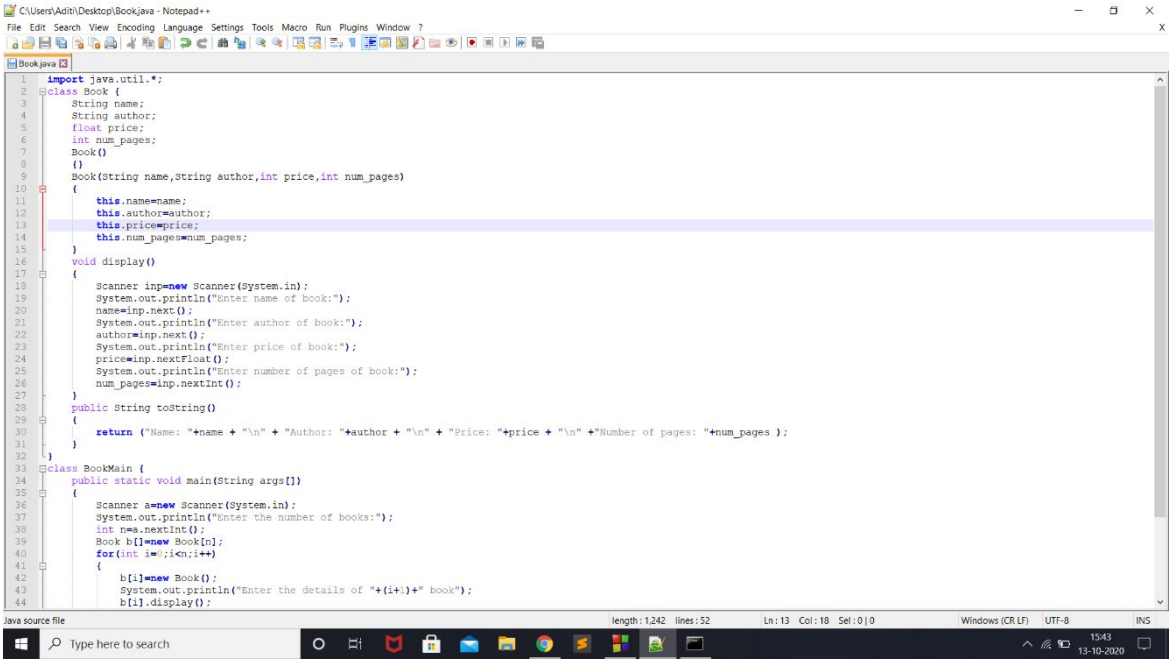
LAB 3

Create a class Book which contains four members: name, author, price,num_pages. Include a constructor to set the values for the members. Include methods to set and get the details of the objects. Include a toString( ) methodthat could display the complete details of the book. Develop a Java program to create n book objects.

```
import java.util.*;
class Book {
	String name;
	String author;
	float price;
	int num_pages;
	Book()
	{}
	Book(String name,String author,int price,int num_pages)
	{
		this.name=name;
		this.author=author;
		this.price=price;
		this.num_pages=num_pages;
	}
	void display()
	{
		Scanner inp=new Scanner(System.in);
		System.out.println("Enter name of book:");
		name=inp.next();
		System.out.println("Enter author of book:");
```

```
                author=inp.next();
                System.out.println("Enter price of book:");
                price=inp.nextFloat();
                System.out.println("Enter number of pages of book:");
                num_pages=inp.nextInt();
        }
        public String toString()
        {
                return ("Name: "+name + "\n" + "Author: "+author + "\n" + "Price: "+price + "\n"
+"Number of pages: "+num_pages );
        }
}
class BookMain {
        public static void main(String args[])
        {
                Scanner a=new Scanner(System.in);
                System.out.println("Enter the number of books:");
                int n=a.nextInt();
                Book b[]=new Book[n];
                for(int i=0;i<n;i++)
                {
                        b[i]=new Book();
                        System.out.println("Enter the details of "+(i+1)+" book");
                        b[i].display();
                }
                for(int i=0;i<n;i++)
                {
                        System.out.println("Details of book "+(i+1));
                        System.out.println(b[i]);
                }
        }
}
```

OUTPUT:


C:\Users\Aditi\Desktop\Book.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Book.java
import java.util.*;
class Book {
String name;
String author;
float price;
int num_pages;
Book()
{}
Book(String name,String author,int price,int num_pages)
{
this.name=name;
this.author=author;
this.price=price;
this.num_pages=num_pages;
}
void display()
{
Scanner inp=new Scanner(System.in);
System.out.println("Enter name of book:");
name=inp.next();
System.out.println("Enter author of book:");
author=inp.next();
System.out.println("Enter price of book:");
price=inp.nextFloat();
System.out.println("Enter number of pages of book:");
num_pages=inp.nextInt();
}
public String toString()
{
return ("Name: "+name + "\n" + "Author: "+author + "\n" + "Price: "+price + "\n" +"Number of pages: "+num_pages);
}
}
class BookMain {
public static void main(String args[])
{
Scanner a=new Scanner(System.in);
System.out.println("Enter the number of books:");
int n=a.nextInt();
Book b[]=new Book[n];
for(int i=0;i<n;i++)
{
b[i]=new Book();
System.out.println("Enter the details of "+(i+1)+" book");
b[i].display();
Java source file
length : 1,242 lines : 52
Ln : 13 Col : 18 Sel : 0 | 0
Windows (CR LF)
UTF-8
INS
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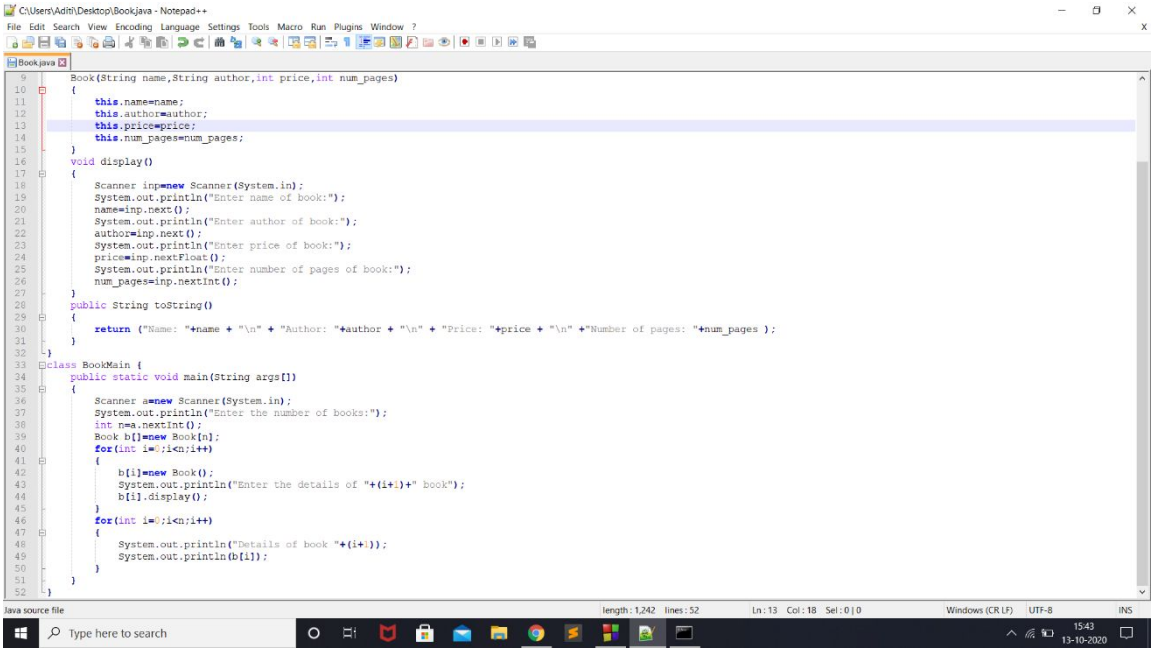
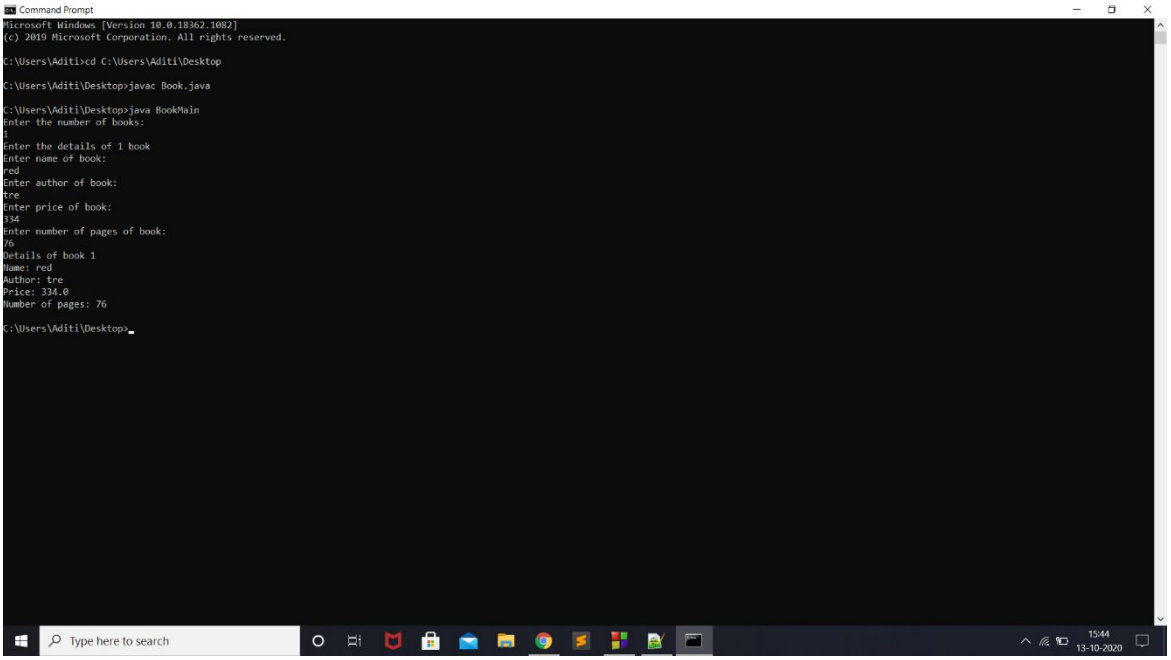
15:43
13-10-2020


C:\Users\Aditi\Desktop\Book.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Book.java
Book(String name,String author,int price,int num_pages)
{
this.name=name;
this.author=author;
this.price=price;
this.num_pages=num_pages;
}
void display()
{
Scanner inp=new Scanner(System.in);
System.out.println("Enter name of book:");
name=inp.next();
System.out.println("Enter author of book:");
author=inp.next();
System.out.println("Enter price of book:");
price=inp.nextFloat();
System.out.println("Enter number of pages of book:");
num_pages=inp.nextInt();
}
public String toString()
{
return ("Name: "+name + "\n" + "Author: "+author + "\n" + "Price: "+price + "\n" +"Number of pages: "+num_pages);
}
}
class BookMain {
public static void main(String args[])
{
Scanner a=new Scanner(System.in);
System.out.println("Enter the number of books:");
int n=a.nextInt();
Book b[]=new Book[n];
for(int i=0;i<n;i++)
{
b[i]=new Book();
System.out.println("Enter the details of "+(i+1)+" book");
b[i].display();
}
for(int i=0;i<n;i++)
{
System.out.println("Details of book "+(i+1));
System.out.println(b[i]);
}
}
}
Java source file
length : 1,242 lines : 52
Ln : 13 Col : 18 Sel : 0 | 0
Windows (CR LF)
UTF-8
INS
Type here to search
15:43
13-10-2020


Command Prompt
Microsoft Windows [Version 10.0.18362.1082]
(c) 2019 Microsoft Corporation. All rights reserved.
C:\Users\Aditi>cd C:\Users\Aditi\Desktop
C:\Users\Aditi\Desktop>javac Book.java
C:\Users\Aditi\Desktop>java BookMain
Enter the number of books:
1
Enter the details of 1 book
Enter name of book:
red
Enter author of book:
tre
Enter price of book:
334
Enter number of pages of book:
76
Details of book 1
Name: red
Author: tre
Price: 334.0
Number of pages: 76
C:\Users\Aditi\Desktop>
Type here to search
15:44
13-10-2020

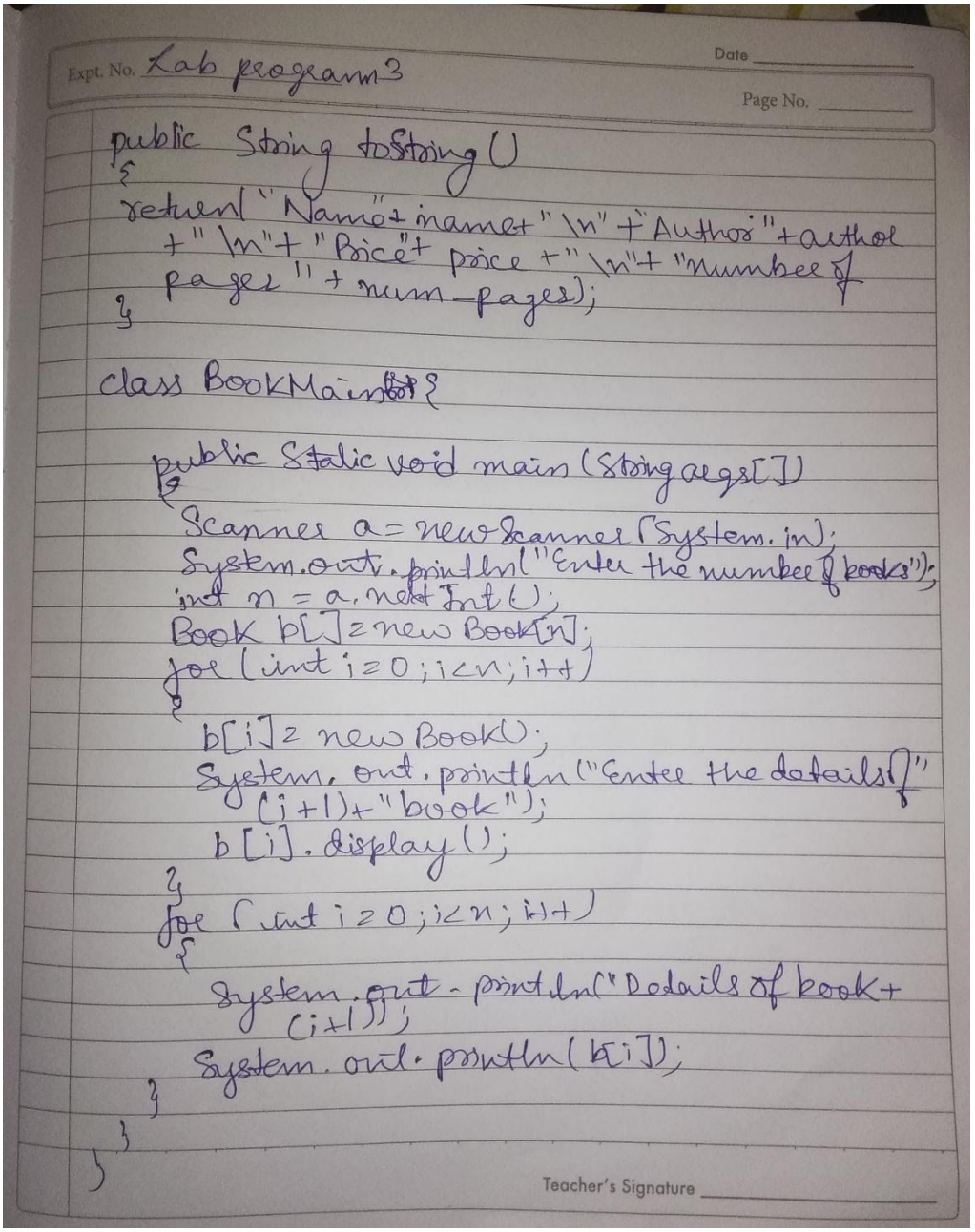
WRITEUP:

Expt. No. Lab Program 3 Date

Page No.

```
import java.util.*;
class BookK
{
String name;
String author;
float price;
int num_pages;
BookK()
{}
BookK(String name, String author, int price,
int num_pages)
{
this.name = name;
this.author = author;
this.price = price;
this.numpages = numpages;
}
void display()
{
Scanner inp = new Scanner(System.in);
System.out.println("Enter the name of
the book");
name = inp.next();
System.out.println("Enter the author of
book");
author = inp.next();
System.out.println("Enter the price");
price = inp.nextFloat();
System.out.println("Enter the pages");
```

Teacher's Signature



Expt. No. Lab program 3 Date

Page No.

```
public String toString()
{
return("Name"+name+"\n"+"Author"+author
  +"\n"+"Price"+price+"\n"+"Number of
  pages"+num_pages);
}

class BookMain{

  public static void main(String args[])
  {
    Scanner a=new Scanner(System.in);
    System.out.println("Enter the number of books");
    int n = a.nextInt();
    Book b[]=new Book[n];
    for(int i=0;i<n;i++)
    {
      b[i]=new Book();
      System.out.println("Enter the details of"
        (i+1)+"book");
      b[i].display();
    }
    for(int i=0;i<n;i++)
    {
      System.out.println("Details of book"+
        (i+1));
      System.out.println(b[i]);
    }
  }
}
```

Teacher's Signature

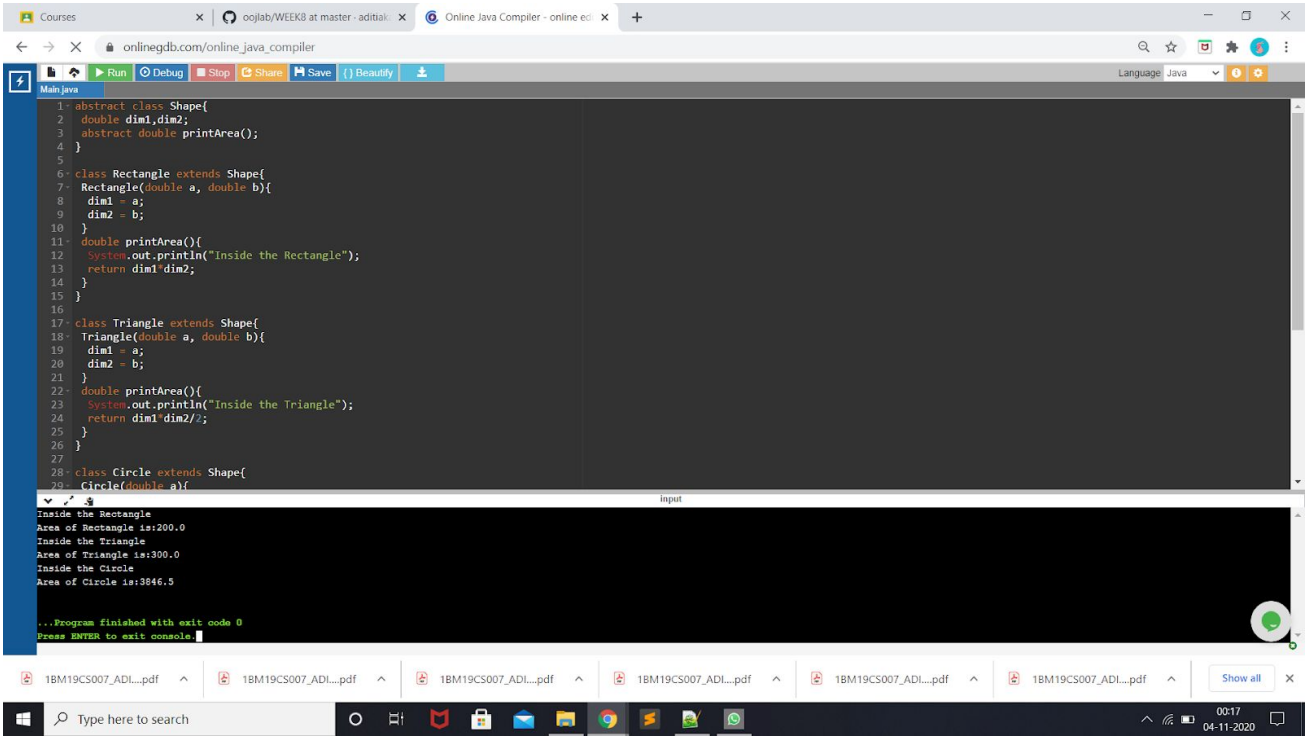
LAB 4

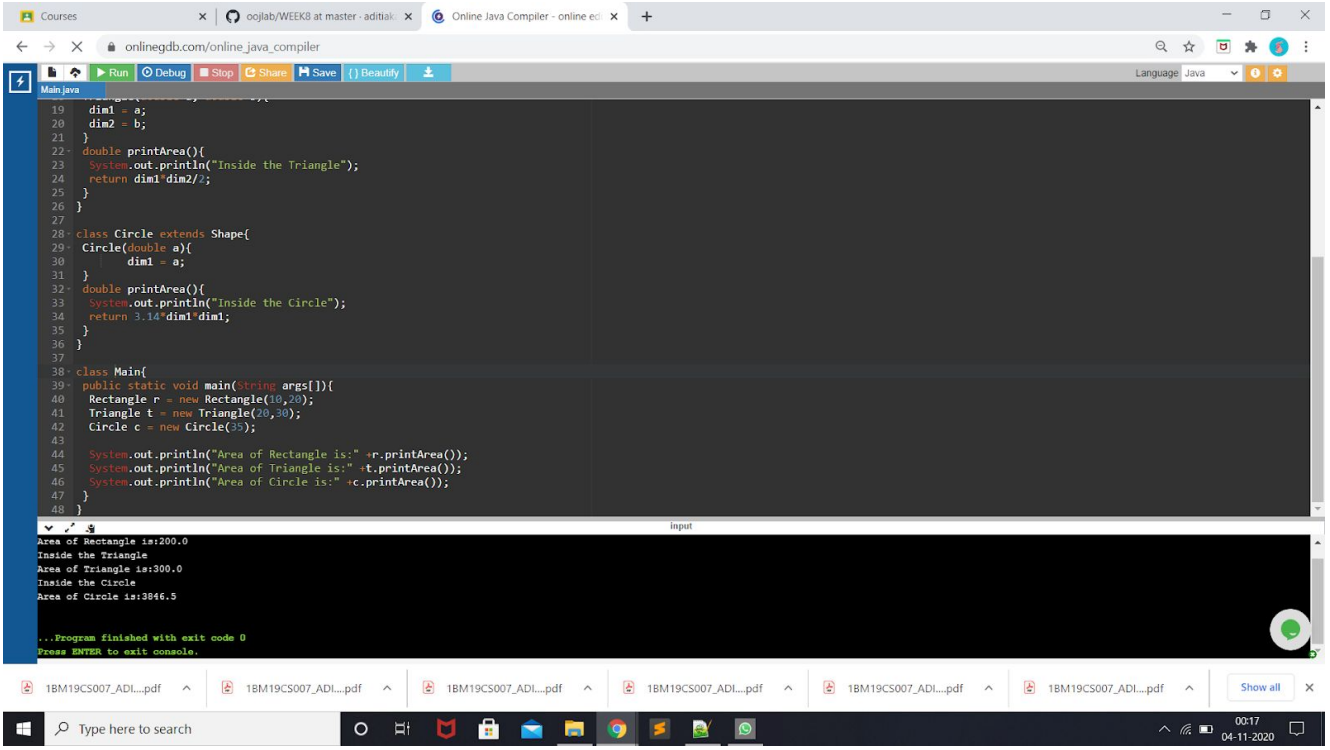
Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea( ). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contain only the method printArea( ) that prints the area of the given shape.

```
abstract class Shape{
 double dim1,dim2;
 abstract double printArea();
}

class Rectangle extends Shape{
 Rectangle(double a, double b){
  dim1 = a;
  dim2 = b;
```

```
 }
 double printArea(){
  System.out.println("Inside the Rectangle");
  return dim1*dim2;
 }
}

class Triangle extends Shape{
 Triangle(double a, double b){
  dim1 = a;
  dim2 = b;
 }
 double printArea(){
  System.out.println("Inside the Triangle");
  return dim1*dim2/2;
 }
}

class Circle extends Shape{
 Circle(double a){
        dim1 = a;
 }
 double printArea(){
  System.out.println("Inside the Circle");
  return 3.14*dim1*dim1;
 }
}

class abs1Main{
 public static void main(String args[]){
  Rectangle r = new Rectangle(10,20);
  Triangle t = new Triangle(20,30);
  Circle c = new Circle(35);

  System.out.println("Area of Rectangle is:" +r.printArea());
  System.out.println("Area of Triangle is:" +t.printArea());
  System.out.println("Area of Circle is:" +c.printArea());
 }
}
```

OUTPUT:


onlinegdb.com/online_java_compiler
Run
Debug
Stop
Share
Save
{ } Beautify
Language Java
Main.java
abstract class Shape{
double dim1,dim2;
abstract double printArea();
}
class Rectangle extends Shape{
Rectangle(double a, double b){
dim1 = a;
dim2 = b;
}
double printArea(){
System.out.println("Inside the Rectangle");
return dim1*dim2;
}
}
class Triangle extends Shape{
Triangle(double a, double b){
dim1 = a;
dim2 = b;
}
double printArea(){
System.out.println("Inside the Triangle");
return dim1*dim2/2;
}
}
class Circle extends Shape{
Circle(double a){
input
Inside the Rectangle
Area of Rectangle is:200.0
Inside the Triangle
Area of Triangle is:300.0
Inside the Circle
Area of Circle is:3846.5
...Program finished with exit code 0
Press ENTER to exit console.
Type here to search
00:17
04-11-2020


onlinegdb.com/online_java_compiler
Run
Debug
Stop
Share
Save
{ } Beautify
Language Java
Main.java
dim1 = a;
dim2 = b;
}
double printArea(){
System.out.println("Inside the Triangle");
return dim1*dim2/2;
}
}
class Circle extends Shape{
Circle(double a){
dim1 = a;
}
double printArea(){
System.out.println("Inside the Circle");
return 3.14*dim1*dim1;
}
}
class Main{
public static void main(String args[]){
Rectangle r = new Rectangle(10,20);
Triangle t = new Triangle(20,30);
Circle c = new Circle(35);
System.out.println("Area of Rectangle is:" +r.printArea());
System.out.println("Area of Triangle is:" +t.printArea());
System.out.println("Area of Circle is:" +c.printArea());
}
}
input
Area of Rectangle is:200.0
Inside the Triangle
Area of Triangle is:300.0
Inside the Circle
Area of Circle is:3846.5
...Program finished with exit code 0
Press ENTER to exit console.
Type here to search
00:17
04-11-2020

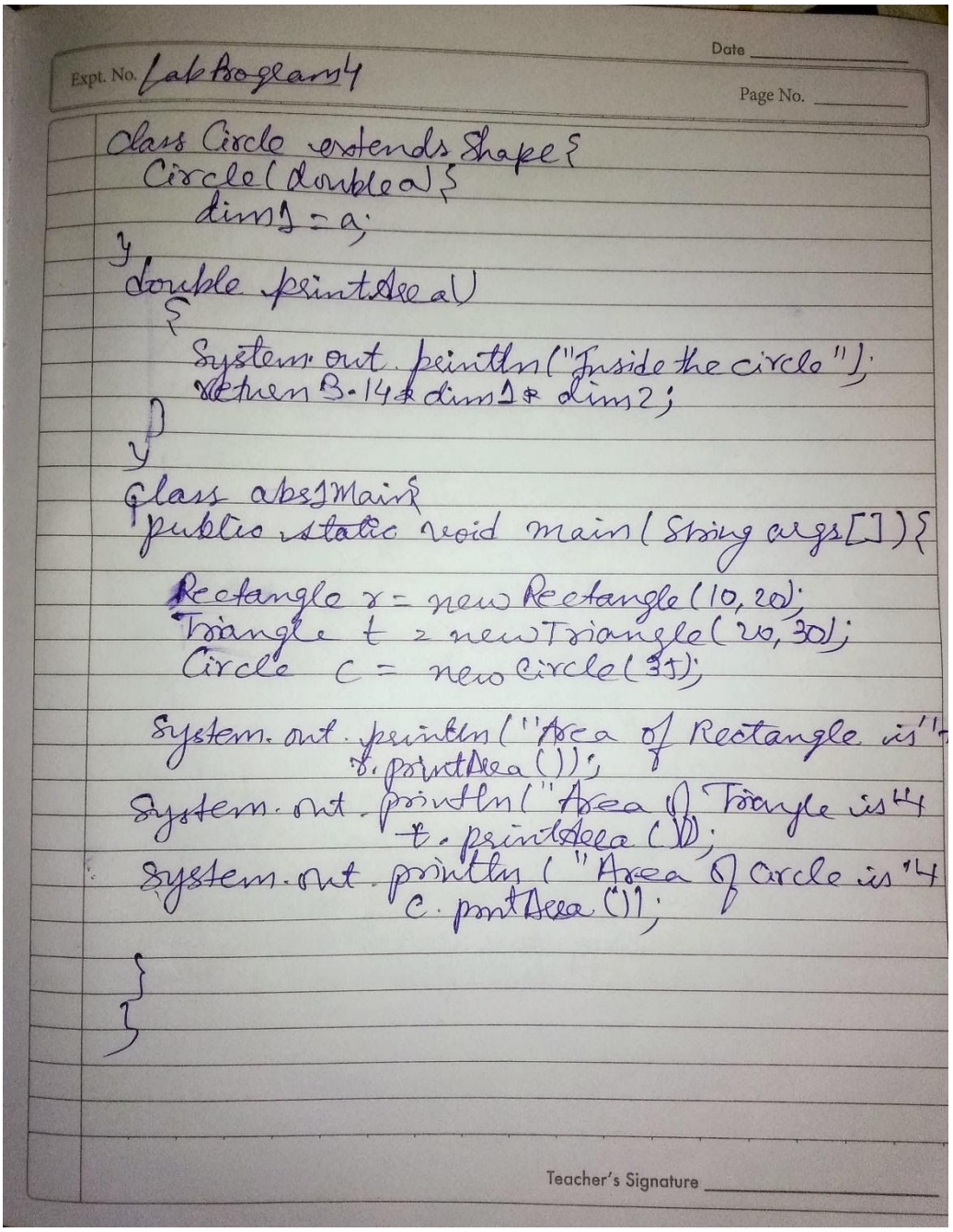
WRITEUP:

Expt. No. Lab Program 4 Date

Page No.

```
abstract class Shape{
double dim1, dim2;
abstract double printArea();
}
class Rectangle extends Shape{
Rectangle (double a, double b)
{
  dim1 = a;
  dim2 = b;
}
double printArea()
{
  System.out.println("Inside the Rectangle");
  return dim1 * dim2;
}
}
class Triangle extends Shape{
  Triangle(double a, double b){
    dim1=a;
    dim2=b;
  }
double printArea(){
  System.out.println("Inside the Triangle");
  return dim1 * dim2;
}
}
```

Teacher's Signature



Expt. No. Lab Program 4 Date Page No.

```
class Circle extends Shape{
  Circle(double a){
    dim1 = a;
}
double printArea()
  {
    System.out.println("Inside the circle");
    return 3.14 * dim1 * dim2;
  }
}
class abs1Main{
public static void main(String args[]){

  Rectangle r = new Rectangle(10, 20);
  Triangle t = new Triangle(20, 30);
  Circle c = new Circle(3);

System.out.println("Area of Rectangle is"+
                    r.printArea());
System.out.println("Area of Triangle is"+
                    t.printArea());
System.out.println("Area of Circle is"+
                    c.printArea());

}
}
```

Teacher's Signature

LAB 5

Develop a Java program to create a class Bank that maintains two kinds of account for its customers, one called savings account and the other current account. The savings account provides compound interest and withdrawal facilities but no cheque book facility. The current account provides cheque book facility but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level, a service charge is imposed. Create a class Account that stores customer name, account number and type of

account. From this derive the classes Curr-acct and Sav-acct to make them more specific to their requirements. Include the necessary methods in order to achieve the following tasks: • Accept deposit from customer and update the balance. • Display the balance. • Compute and deposit interest • Permit withdrawal and update the balance • Check for the minimum balance, impose penalty if necessary and update the balance.

```
Importjava.util.
Scanner;


                    abstract class Account{
                     String c_name, acc_type;
                     int acc_num;
                     double balance;
                     int minbalance = 2000;
                     Account(String c_name, int acc_num, double balance){
                      this.c_name = c_name;
                      this.acc_num = acc_num;
                            this.balance = balance;
                      this.acc_type = acc_type;
                     }


                      abstract void addbal(double amount);
                            abstract void display();
                            abstract void withdraw(double amount);
                    }


                    class curr_acct extends Account{
                     curr_acct(String c_name, int acc_num, double balance){
                      super(c_name, acc_num, balance);
                      System.out.println("Details ot the customer:");
                      System.out.println("Customer name: " +c_name +"\tAccount
                    number: " +acc_num+ "\tBalance: " +balance+ "Account type:
                    current");
                     }

                        void addbal(double amount){
                         this.balance += amount;
                        }


                        void display(){
                         System.out.println("The balance is:" +this.balance);
                        }


                        void withdraw(double amount){
                         if(this.balance<amount){
                          System.out.println("Insufficient funds");
                          System.out.println("Yor balance is: " +this.balance);
                          return;
                         }
                         this.balance = this.balance - amount;
```

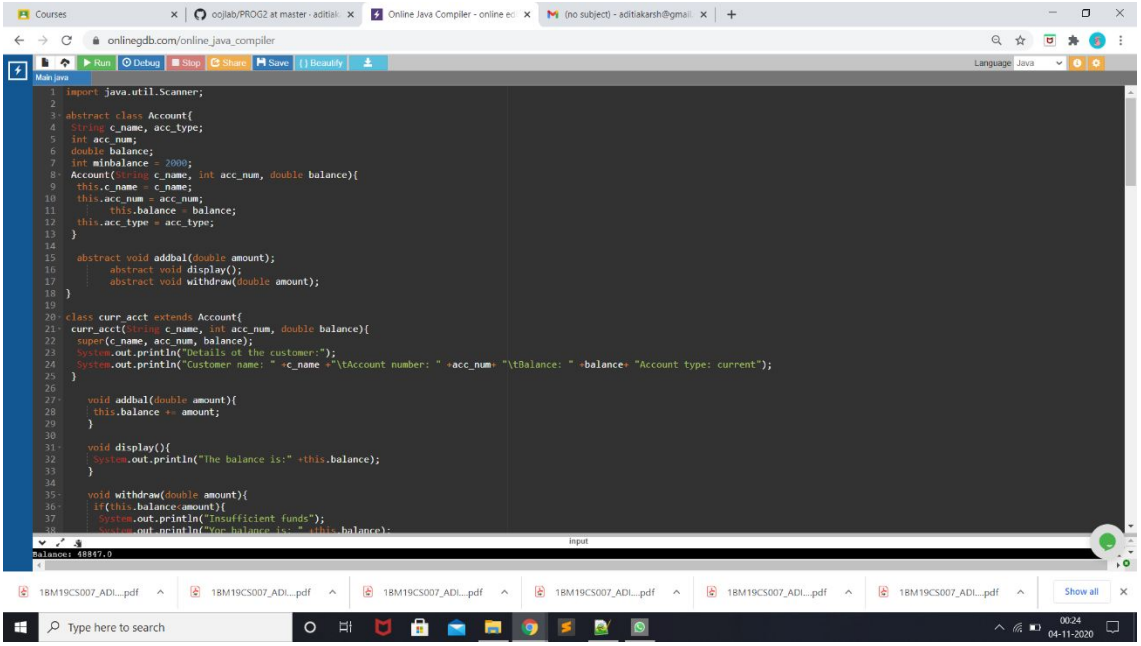
```
     if(this.balance<minbalance){
            this.balance = this.balance - this.balance*0.5;
            System.out.println("A penalty of Rs. "
+this.balance*0.5 + "has been charged as minimum balance is
not satisfied");
            System.out.println("Updated Balance: "
+this.balance);
            System.out.println("Cannot withdraw");
     }
        else if(balance> minbalance){
         this.balance = this.balance - amount;
         System.out.println("Balance is: " +this.balance);
        }
    }
}


class sav_acct extends Account{
 sav_acct(String c_name, int acc_num, double balance){
  super(c_name, acc_num, balance);
  System.out.println("Customer name: " +c_name +"\tAccount
number: " +acc_num+ "\tBalance: " +balance+ "Account type:
savings");
 }
 void addbal(double amount){
     this.balance += amount;
    }


    void display(){
     System.out.println("The balance is:" +this.balance);
    }


    void withdraw(double amount){
     if(this.balance<amount){
      System.out.println("Insufficient funds");
      System.out.println("Yor balance is: " +this.balance);
     }
     this.balance = this.balance - amount;
     if(this.balance<minbalance){
            this.balance = this.balance - this.balance*0.5;
            System.out.println("A penalty of Rs. "
+this.balance*0.5 + "has been charged as minimum balance is
not satisfied");
            System.out.println("Updated Balance: "
+this.balance);
            System.out.println("Cannot withdraw");
     }
        else if(balance> minbalance){
         this.balance = this.balance - amount;
         System.out.println("Balance is: " +this.balance);
        }
    }
```

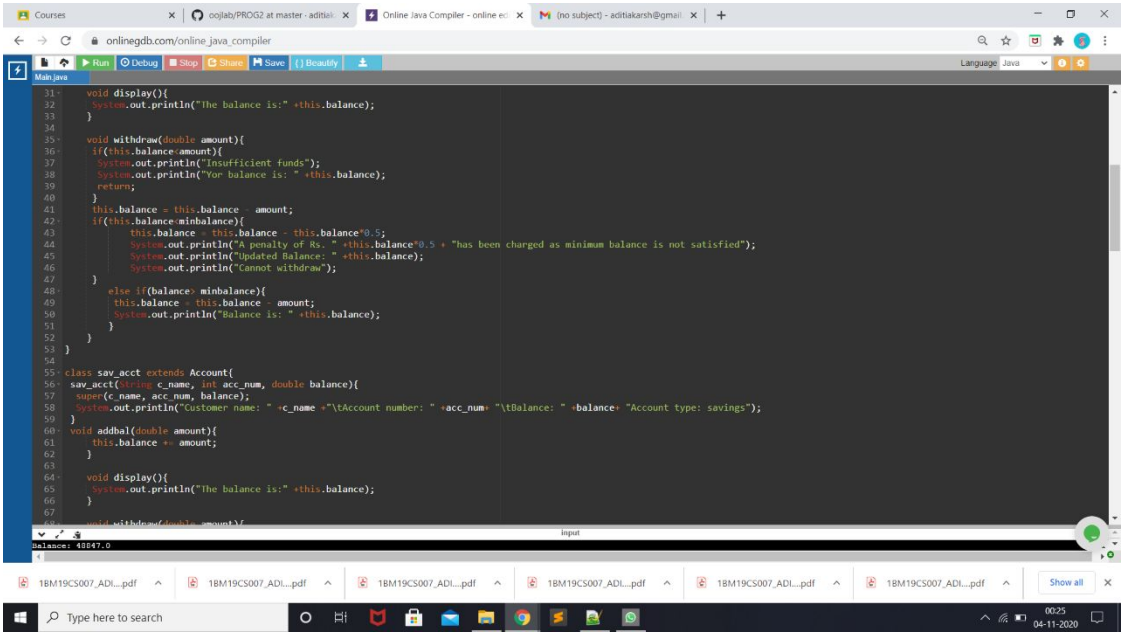
```
    void intrest(double amount){
     int time = 3, n=1;
     System.out.println("Rate of intrest is 0.2");
     this.balance = this.balance*Math.pow(1+(0.2)/n,
(n*time));
    }
}


class abs2Main{
 public static void main(String args[]){
  int choice,ch,n=1;
  double amount;
        Scanner s1 = new Scanner(System.in);
        curr_acct c = new curr_acct("Aditi", 12345, 50000);
        sav_acct s = new sav_acct("Aditi", 12345, 50000);
        System.out.println("Press 1.For Current
account\nPress 2.For Savings account");
        choice = s1.nextInt();
        switch(choice){
         case 1: System.out.println("****Current
Account****");
                 while(n!=0){

System.out.println("1.AddBalance\n2.displayBalance\n3.withd
raw\n4.checkbook\n5.Exit");
                        ch = s1.nextInt();
                        String reciever;
                        double recamount;
                        switch(ch){
                         case 1:
                                System.out.println("enter
amount to be added:");
                                amount = s1.nextDouble();
                                c.addbal(amount);
                                break;


                            case 2:
                                 c.display();
                                 break;


                            case 3:
                                System.out.println("enter
amount to be withdrawn:");
                                amount = s1.nextDouble();
                                c.withdraw(amount);
                                break;


                            case 4:
                                System.out.println("Enter
the name of the reciever:");
```

```
                                reciever = s1.next();
                                System.out.println("Enter
amount to be debited to reciever:");
                                recamount =
s1.nextDouble();
                                if(recamount>c.balance){

System.out.println("Inssuficient Balance");
                                }
                                else{
                                 System.out.println("Amount
of " +recamount+ "sent to" +reciever);
                                 c.balance = c.balance -
recamount;

System.out.println("Balance: " +c.balance);
                                 s.balance = c.balance;
                                }


                            case 5:
                                n=0;
                                break;


                            default:
System.out.println("Invalid input");
                           }
                      }
                      break;

         case 2: System.out.println("****Savings
Account****");
                 while(n!=0){

System.out.println("1.AddBalance\n2.displayBalance\n3.withd
raw\n4.Exit");
                        ch = s1.nextInt();
                        switch(ch){
                         case 1:
                                System.out.println("enter
amount to be added:");
                                amount = s1.nextDouble();
                                s.addbal(amount);
                                break;


                            case 2:
                                 s.display();
                                 break;


                            case 3:
                                System.out.println("enter
amount to be withdrawn:");
```

```
                                        amount = s1.nextDouble();
                                        s.withdraw(amount);
                                        break;


                                    case 4:
                                        n=0;


                                    default:
System.out.println("Invalid input");
                                }
                            }
                            break;


                 default: System.out.println("Invalid input");
                }
            }
        }
```

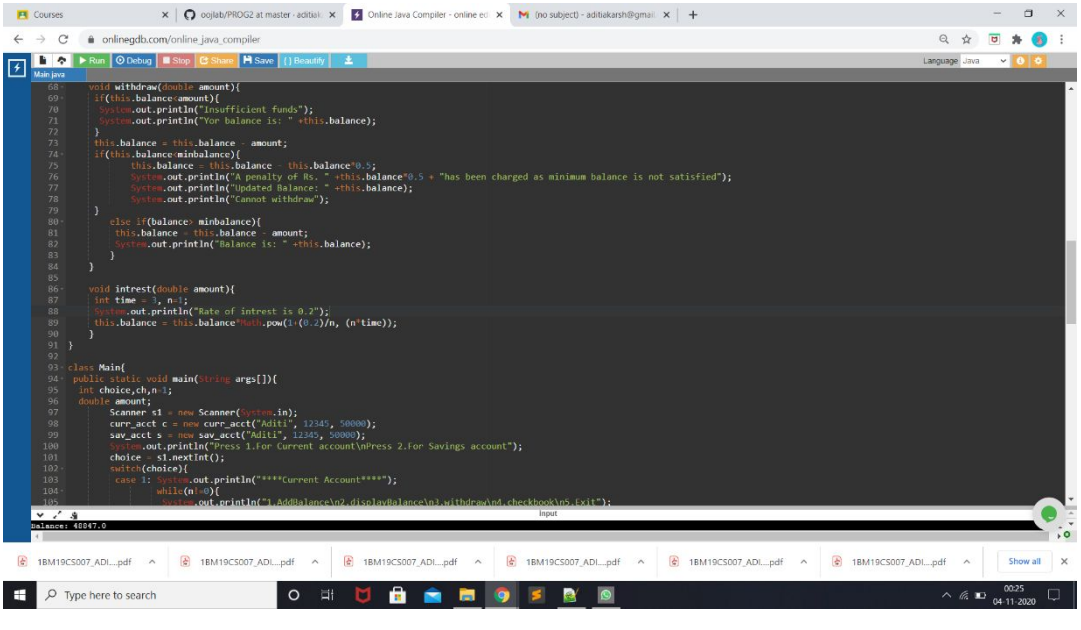
OUTPUT:





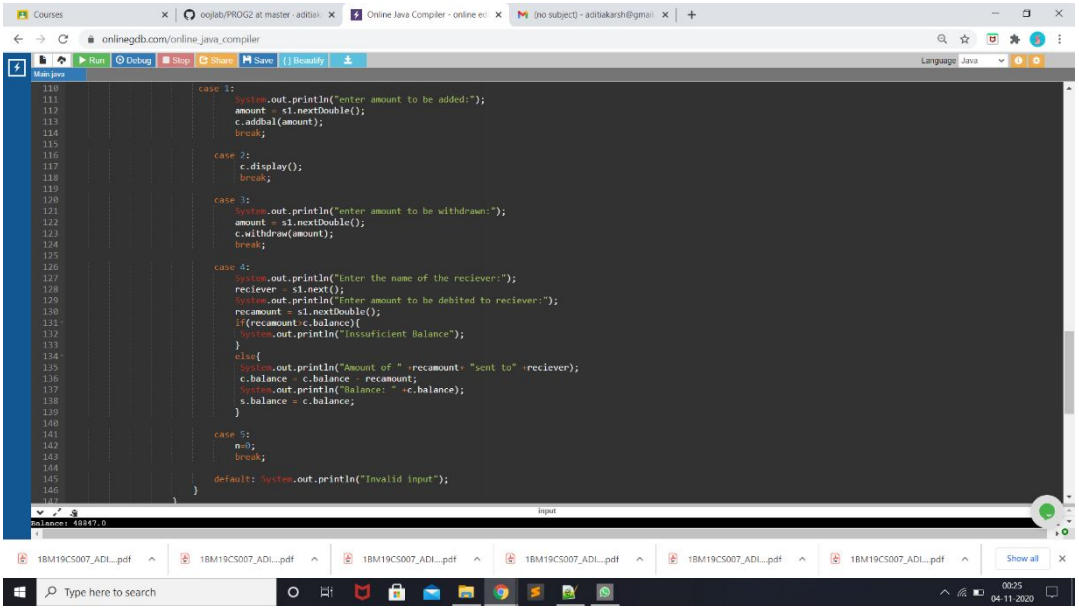
```
    void display(){
     System.out.println("The balance is:" +this.balance);
    }

    void withdraw(double amount){
     if(this.balance<amount){
      System.out.println("Insufficient funds");
      System.out.println("Yor balance is: " +this.balance);
      return;
     }
     this.balance = this.balance - amount;
     if(this.balance<minbalance){
            this.balance = this.balance - this.balance*0.5;
            System.out.println("A penalty of Rs. " +this.balance*0.5 + "has been charged as minimum balance is not satisfied");
            System.out.println("Updated Balance: " +this.balance);
            System.out.println("Cannot withdraw");
     }
        else if(balance> minbalance){
         this.balance = this.balance - amount;
         System.out.println("Balance is: " +this.balance);
        }
    }
}

class sav_acct extends Account{
 sav_acct(String c_name, int acc_num, double balance){
  super(c_name, acc_num, balance);
  System.out.println("Customer name: " +c_name +"\tAccount number: " +acc_num+ "\tBalance: " +balance+ "Account type: savings");
 }
 void addbal(double amount){
     this.balance += amount;
    }

    void display(){
     System.out.println("The balance is:" +this.balance);
    }
```

```
input
Balance: 48047.0
```



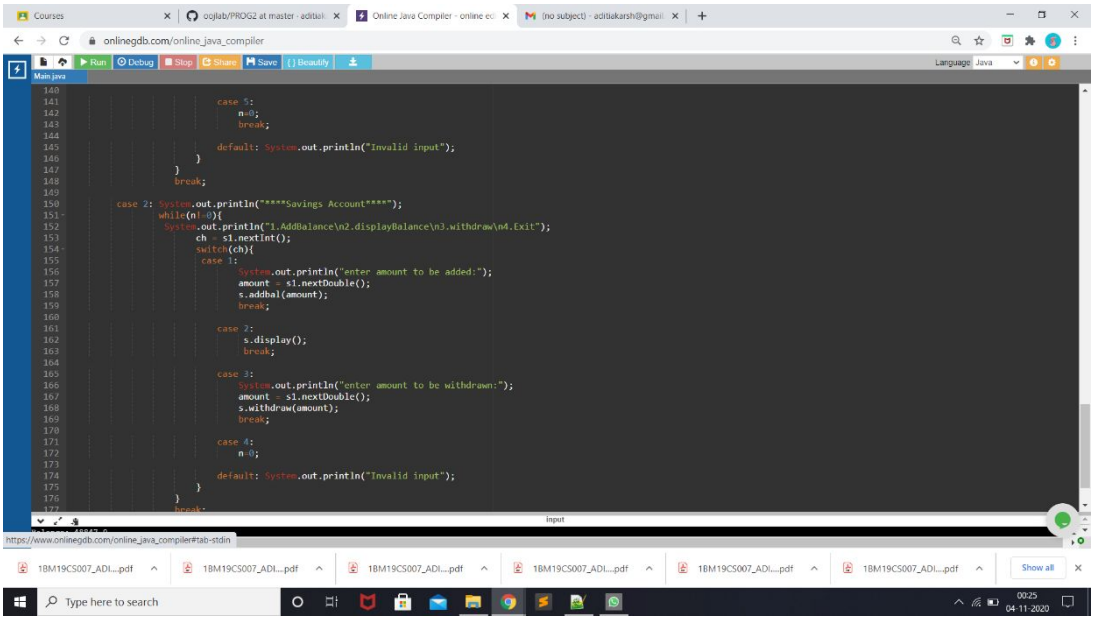
```
    void withdraw(double amount){
     if(this.balance<amount){
      System.out.println("Insufficient funds");
      System.out.println("Yor balance is: " +this.balance);
     }
     this.balance = this.balance - amount;
     if(this.balance<minbalance){
            this.balance = this.balance - this.balance*0.5;
            System.out.println("A penalty of Rs. " +this.balance*0.5 + "has been charged as minimum balance is not satisfied");
            System.out.println("Updated Balance: " +this.balance);
            System.out.println("Cannot withdraw");
     }
        else if(balance> minbalance){
         this.balance = this.balance - amount;
         System.out.println("Balance is: " +this.balance);
        }
    }

    void intrest(double amount){
     int time = 3, n=1;
     System.out.println("Rate of intrest is 0.2");
     this.balance = this.balance*Math.pow(1+(0.2)/n, (n*time));
    }
}

class Main{
 public static void main(String args[]){
  int choice,ch,n=1;
  double amount;
        Scanner s1 = new Scanner(System.in);
        curr_acct c = new curr_acct("Aditi", 12345, 50000);
        sav_acct s = new sav_acct("Aditi", 12345, 50000);
        System.out.println("Press 1.For Current account\nPress 2.For Savings account");
        choice = s1.nextInt();
        switch(choice){
         case 1: System.out.println("****Current Account****");
                 while(n!=0){
                  System.out.println("1.AddBalance\n2.displayBalance\n3.withdraw\n4.checkbook\n5.Exit");
```

```
input
Balance: 48047.0
```

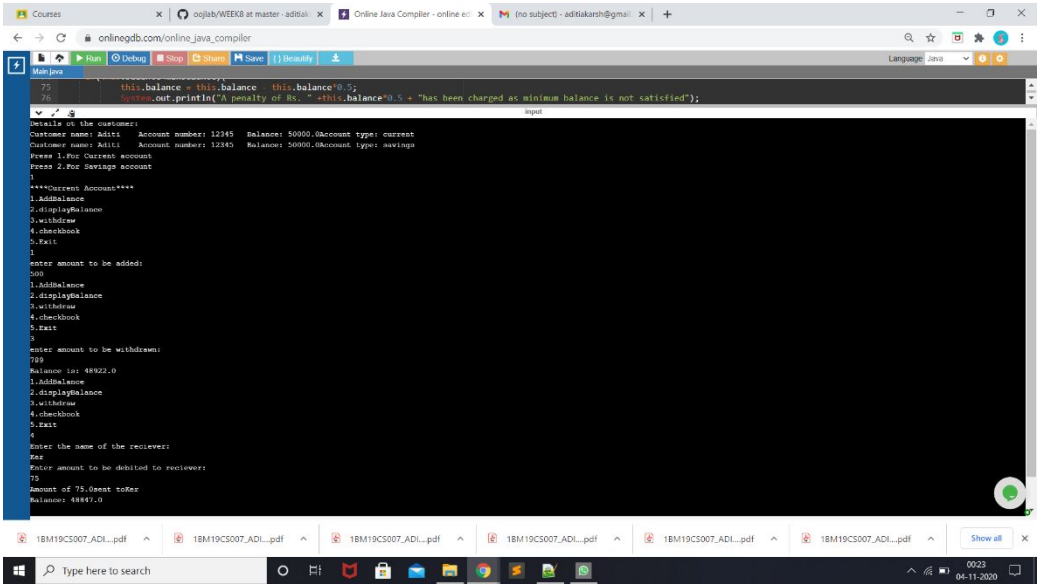


```
                    case 1:
                        System.out.println("Enter amount to be added:");
                        amount = s1.nextDouble();
                        c.addbal(amount);
                        break;

                    case 2:
                        c.display();
                        break;

                    case 3:
                        System.out.println("Enter amount to be withdrawn:");
                        amount = s1.nextDouble();
                        c.withdraw(amount);
                        break;

                    case 4:
                        System.out.println("Enter the name of the reciever:");
                        reciever = s1.next();
                        System.out.println("Enter amount to be debited to reciever:");
                        recamount = s1.nextDouble();
                        if(recamount>c.balance){
                        System.out.println("Inssuficient Balance");
                        }
                        else{
                        System.out.println("Amount of " +recamount+ "sent to" +reciever);
                        c.balance = c.balance - recamount;
                        System.out.println("Balance: " +c.balance);
                        s.balance = c.balance;
                        }

                    case 5:
                        n=0;
                        break;

                    default: System.out.println("Invalid input");
                }
            }
```

```
Balance: 48847.0
```



```
                    case 5:
                        n=0;
                        break;

                    default: System.out.println("Invalid input");
                }
            }
            break;

        case 2: System.out.println("****Savings Account****");
                while(n!=0){
                System.out.println("1.AddBalance\n2.displayBalance\n3.withdraw\n4.Exit");
                ch = s1.nextInt();
                switch(ch){
                case 1:
                        System.out.println("enter amount to be added:");
                        amount = s1.nextDouble();
                        s.addbal(amount);
                        break;

                    case 2:
                        s.display();
                        break;

                    case 3:
                        System.out.println("enter amount to be withdrawn:");
                        amount = s1.nextDouble();
                        s.withdraw(amount);
                        break;

                    case 4:
                        n=0;

                    default: System.out.println("Invalid input");
                }
            }
            break;
```


onlinegdb.com/online_java_compiler
Run
Debug
Stop
Share
Save
{ } Beautify
Language
Java
Main.java
this.balance = this.balance -this.balance*0.5;
System.out.println("A penalty of Rs. " +this.balance*0.5 + "has been charged as minimum balance is not satisfied");
input
Details of the customer:
Customer name: Aditi Account number: 12345 Balance: 50000.0Account type: current
Customer name: Aditi Account number: 12345 Balance: 50000.0Account type: savings
Press 1.For Current account
Press 2.For Savings account
1
****Current Account****
1.AddBalance
2.displayBalance
3.withdraw
4.checkbook
5.Exit
1
enter amount to be added:
500
1.AddBalance
2.displayBalance
3.withdraw
4.checkbook
5.Exit
3
enter amount to be withdrawn:
789
Balance is: 48922.0
1.AddBalance
2.displayBalance
3.withdraw
4.checkbook
5.Exit
4
Enter the name of the reciever:
Ker
Enter amount to be debited to reciever:
75
Amount of 75.0sent toKer
Balance: 48847.0
1BM19CS007_ADI....pdf
Show all
Type here to search
0023
04-11-2020

WRITEUP:

Expt. No Lab Program 5 Date

Page No.

```
import java.util.Scanner;
abstract class Account {
  String c_name, acc_type;
  int acc_num;
  double balance;
  int minbalance = 2000;
  Account (String c_name, int acc_num,
  double balance)
  { this.c_name = c_name;
    this.acc_num = acc_num;
      this.balance = balance;
    this.acc_type = acc_type;
  }
   abstract void addbal (double amount);
      abstract void display();
      abstract void withdraw(double amount);
   }
class curr_acct extends Account{
curr_acct (String c_name, int acc_num,
  double balance){
super(c_name, acc_num, balance);
System.out.println("Details of the customer");
System.out.println("Customer name" +
c_name + "\n Account number" + acc_num
+ "Balance" + balance + "Account type: current");
}
}
```

Teacher's Signature

Expt. No. Lab5 Date

Page No.

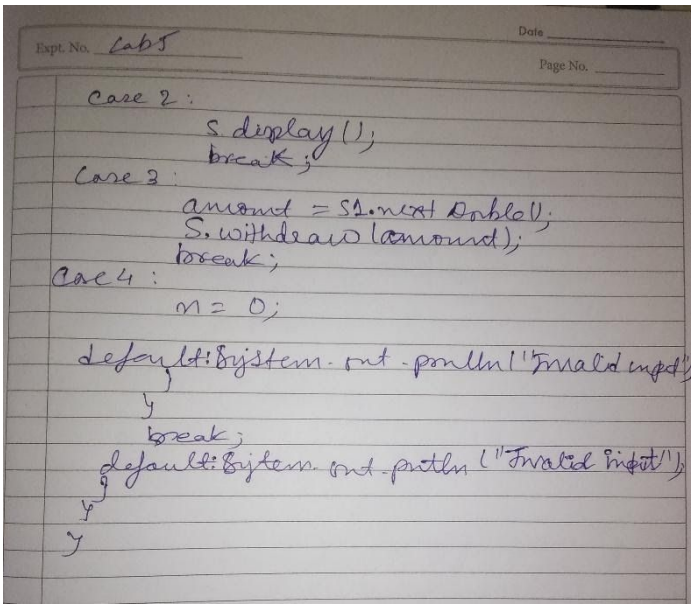
```
void addbal(double amount){
    this.balance += amount;
}
void display(){
    System.out.println("The balance is "+this.balance);
}
void withdraw(double amount){
    if(this.balance < minbalance){
        this.balance = this.balance - this.balance*0.05;
        System.out.println("Updated Balance "+this.balance);
    }
    System.out.println("Cannot withdraw");
    else if(balance > minbalance){
        this.balance = this.balance - amount;
        System.out.println("Balance is "+this.balance);
    }
}
void interest(double amount){
    int time = 3, n = 1;
    System.out.println("Rate of interest is 0.2");
    this.balance = this.balance * Math.pow(1+(0.2)/n, n*time);
}
}
```

Expt. No. Lab5 Date

Page No.

```
class Main{
    Public static void main(String args[]){
        int ch, n=1;
        double amount;
        Scanner s1 = new Scanner(System.in);
        curr_acct c = new curr_acct("Adi, 1234, 5000);
        sav_acct s = new sav_acct("Adi, 123, 10000);
System.out.println("Press 1. For Current Acc
    Balance Press 2. for Saving account");
    ch = s1.nextInt();
    switch(ch){
    case 1: System.out.println("1 for Current Acc");
        while(n!=0){
        ch = s1.nextInt();
        String receiver;
        double recamount;
        switch(ch){
        case 1: amount = s1.nextDouble();
                c.addbal(amount);
                break;
        case 2:
                c.display();
                break;
        case 3:
                amount = s1.nextDouble();
                c.withdraw(amount);
                break;
```

Teacher's Signature



LAB 6

Create a package CIE which has two classes- Student and Internals. The class Personal has members like usn, name, sem. The class Internals has anarray that stores the internal marks scored in five courses of the current semester of the student. Create another package SEE which has the class External which is a derived class of Student. This class has an array that stores the SEE marks scored in five courses of the current semester of the student. Import the two packages in a file that declares the final marks of n students in all five courses.

Student.java

```
package CIE;

import java.util.Scanner;

public class Student
{ public String usn,name;
  public int sem;
}
```

****

Internals.java

```
package CIE;


import java.util.Scanner;




public class Internals extends Student
{ public int cie[]=new int[5];
  Scanner get=new Scanner(System.in);

  public void geti()
  { System.out.println("Enter Details: ");
    System.out.println("USN :");
       usn = get.next();
       System.out.println("NAME :");
       name =get.next();
       System.out.println("SEMESTER :");
       sem =get.nextInt();
       System.out.println("CIE MARKS :");
       for(int i=0;i<5;i++)
       { System.out.println("Subject "+(1+i));
         cie[i]=get.nextInt(); }
  }
  public void dispi()
  { System.out.println("\nUSN :"+usn);
    System.out.println("NAME :"+name);
       System.out.println("SEMESTER :"+sem);
       System.out.println("CIE :");
       for(int i=0;i<5;i++)
       { System.out.println(cie[i]); }
       System.out.println("SEE :");
  }
}
```

```
**********************************************************************
***************
```

Externals.java

```
package SEE;
import CIE.*;
import java.util.Scanner;
```

```
public class Externals extends CIE.Student
{ public int see[]=new int[5];
  Scanner get=new Scanner(System.in);


  public void getm()
  { for(int i=0;i<5;i++)
       { System.out.println("Subject "+(1+i));
         see[i]=get.nextInt(); }
  }
  public void dispsm()
  {for(int i=0;i<5;i++)
       { System.out.println(see[i]); }


  }
}
**********************************************************************
******************
```

marks.java

```
import java.util.Scanner;
import CIE.*;
import SEE.*;


class marks
{ public static void main(String args[])
  { Scanner get=new Scanner(System.in);
    int n;
       System.out.println("Enetr the no of students: ");
       n=get.nextInt();
    CIE.Internals ints[]=new CIE.Internals[n];
       SEE.Externals exts[]=new SEE.Externals[n];
    for(int i=0;i<n;i++)
       { ints[i]=new CIE.Internals();
      exts[i]=new SEE.Externals();
      ints[i].geti();
         System.out.println("SEE MARKS :");
         exts[i].getm();
       }
      for(int i=0;i<n;i++)
      { ints[i].dispi();
      int total=0;
      exts[i].dispsm();
         for(int j=0;j<5;j++)
         { total=total+ints[i].cie[j]+(exts[i].see[j]/2);}
      System.out.println("TOTAL MARKS : "+total);
       }
  }
```

```
}
```

OUTPUT

```
C:\Users\Aditi\Desktop>cd labn

C:\Users\Aditi\Desktop\labn>javac marks.java

C:\Users\Aditi\Desktop\labn>java marks
Enetr the no of students:
1
Enter Details:
USN :
009
NAME :
ari
SEMESTER :
6
CIE MARKS :
Subject 1
44
Subject 2
33
Subject 3
50
Subject 4
21
Subject 5
44
SEE MARKS :
Subject 1
78
Subject 2
88
Subject 3
98
Subject 4
77
Subject 5
78

USN :009
NAME :ari
SEMESTER :6
CIE :
44
33
50
21
44
SEE :
78
88
98
77
78
TOTAL MARKS : 83
TOTAL MARKS : 77
TOTAL MARKS : 99
TOTAL MARKS : 59
TOTAL MARKS : 83

C:\Users\Aditi\Desktop\labn>
```

WRITEUP:

Date

Page No.

Lab program 6

student.java

```
package CIE;
import java.util.scanner;
public class student
{
  public string usn, name;
  public int sem;
}
```

— x — x — x — x —

internals.java

```
package CIE;
import java.util.scanner;
public class Internals extends student
{
  public int cie[]=new int[5];
  scanner get=new scanner(system.in);

  public void geti()
{
system.out.println("Enter details");
System.out.println("USN");
    usn = get.next();
    system.out.println("NAME");
    name = get.next();
    system.out.println("SEM");
    sem = get.next();
```

Teacher's Signature

Date

Page No.

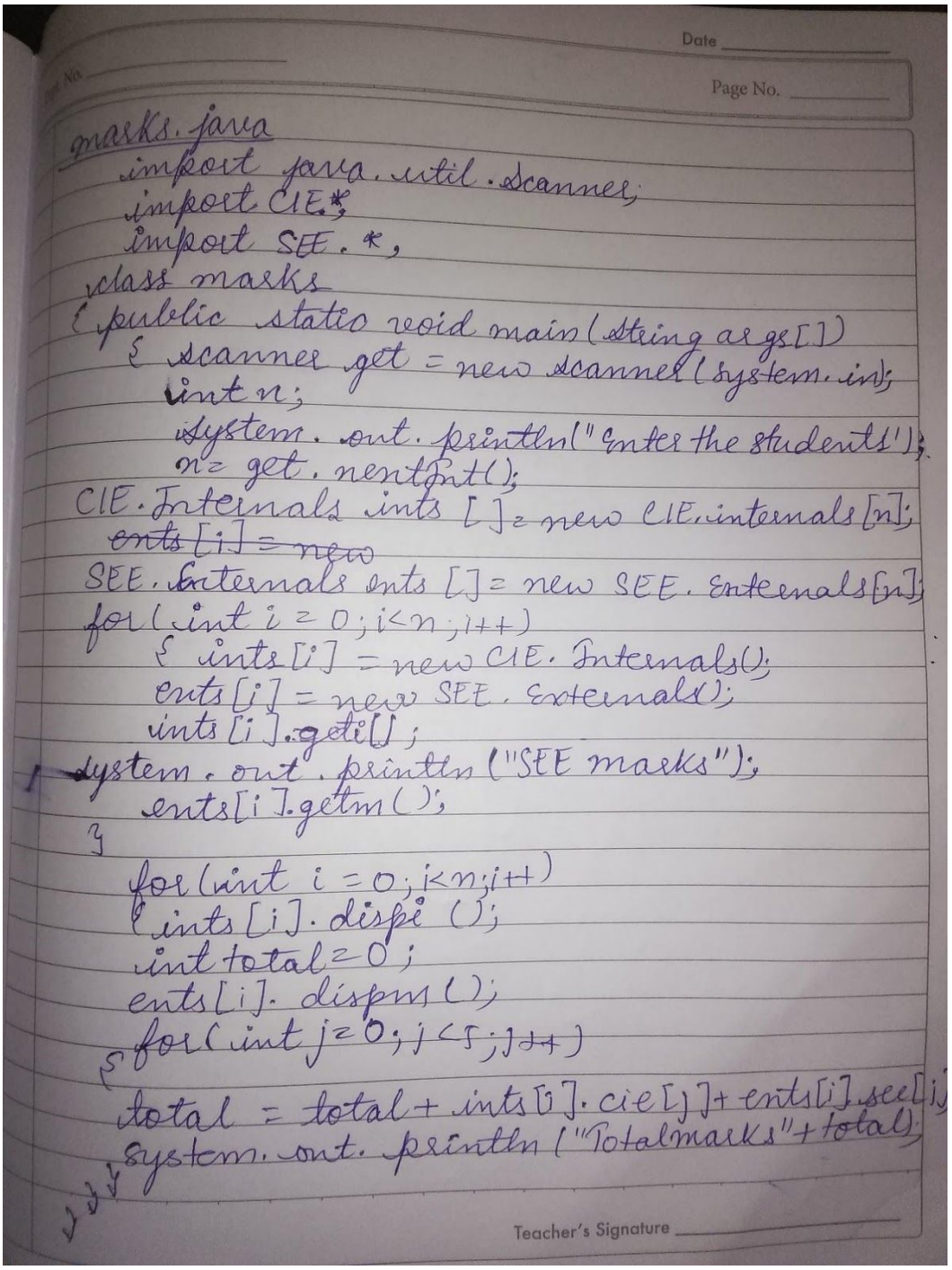
```
system.out.println ("CIE MARKS");
for(int i = 0; i<5 ;i++)
{
    system.out.println (cie[i]);}
    system.out.println ("SEE:");
}
}
```

x x x x

Externals.java

```
package SEE;
import CIE.*;
import java.util.Scanner;

public class Externals extends CIE.student
{ public int see[] = new int[5];
  Scanner get = new Scanner (system.in);

  public void getm()
{ for (int i=0; i<5; i++)
  {
    system.out.println ("Subject"+(1+i));
    see[i] = get.nextInt(); }
  }
public void dispsm()
{ for (int i=0; i<5; i++)
  {
    system.out.println (see[i]); }
} }
```

Teacher's Signature



```
marks.java
import java.util.Scanner;
import CIE.*;
import SEE.*;
class marks
{public static void main(String args[])
 { Scanner get = new Scanner(System.in);
   int n;
   System.out.println("Enter the students");
   n= get.nextInt();
CIE.Internals ints [] = new CIE.internals[n];
ints[i] = new
SEE.Externals ents [] = new SEE.Externals[n];
for(int i = 0;i<n;i++)
   { ints[i] = new CIE.Internals();
   ents[i] = new SEE.External();
   ints[i].geti();
System.out.println("SEE marks");
   ents[i].getm();
}
   for(int i =0;i<n;i++)
   {ints[i].dispi();
   int total=0;
   ents[i].dispm();
   for(int j=0;j<5;j++)
   total = total+ints[i].cie[j]+ents[i].see[j];
   System.out.println("Totalmarks"+total);
}}}
```

Teacher's Signature

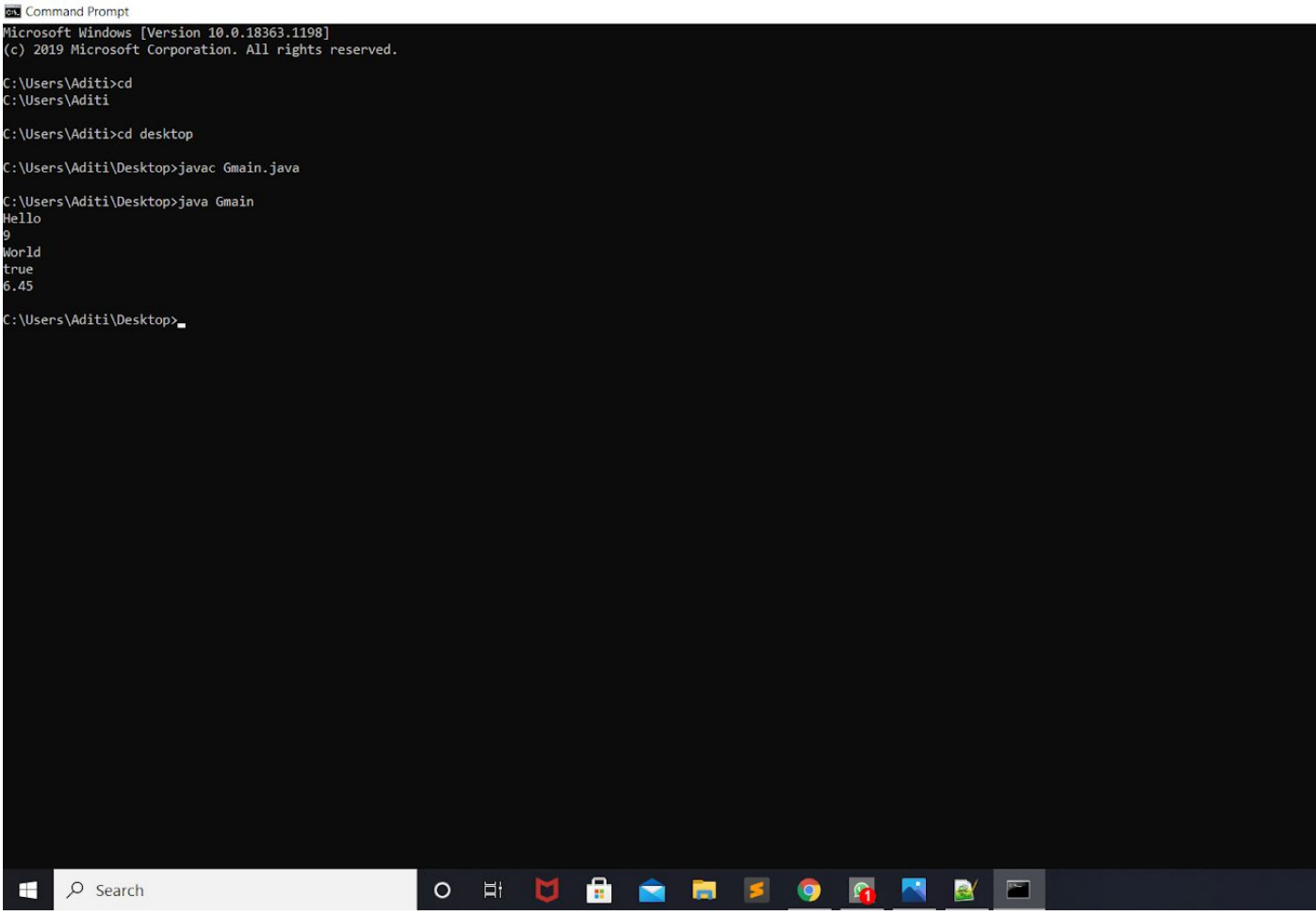
LAB 7

Write a program to demonstrate generics with multiple object parameters.

```
class
Generics<T,
U,S,B,D>{
                T o1;
```

```
    U o2;
    S o3;
    B o4;
    D o5;
    Generics(T o1, U o2,S o3,B o4,D o5){
        this.o1 = o1;
        this.o2 = o2;
        this.o3 = o3;
        this.o4 = o4;
        this.o5 = o5;
    }
    public void print(){
        System.out.println(o1);
        System.out.println(o2);
        System.out.println(o3);
        System.out.println(o4);
        System.out.println(o5);
    }
}


public class Gmain{
    public static void main (String[] args){
        Generics <String,Integer, String, Boolean, Double> o =
            new Generics<String, Integer, String, Boolean,
Double>("Hello", 9,"World",true,6.45);


        o.print();
    }
```

OUTPUT :



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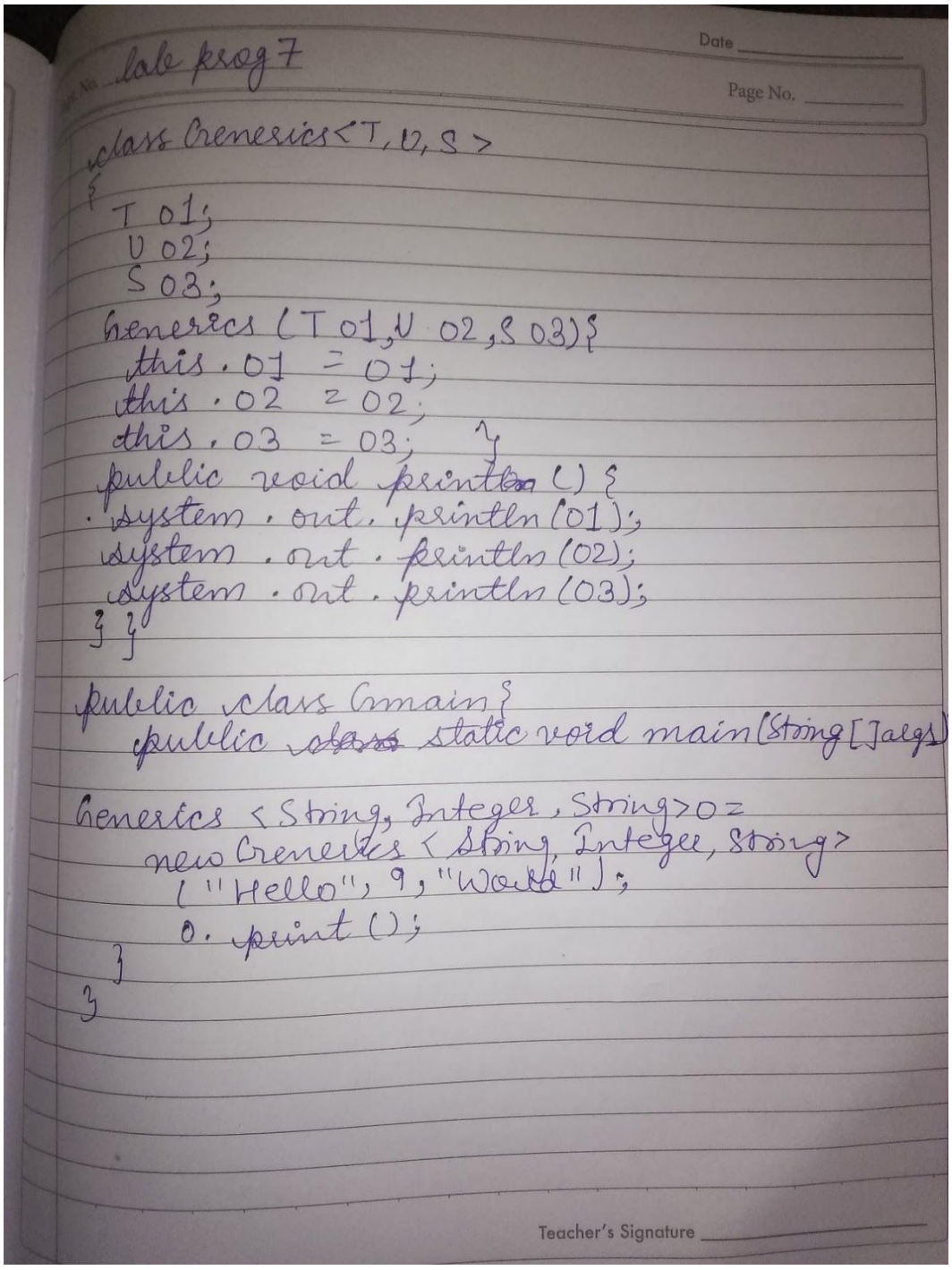


```
lab prog 7

class Generics<T, U, S>
{
  T o1;
  U o2;
  S o3;
Generics (T o1, U o2, S o3){
  this.o1 = o1;
  this.o2 = o2;
  this.o3 = o3; }
public void println () {
 System.out.println(o1);
 System.out.println(o2);
 System.out.println(o3);
} }

public class Cmain{
   public static void main(String[]args)

Generics <String, Integer, String>o=
    new Generics <String, Integer, String>
      ("Hello", 9, "World");
      o.print();
  }
}
```

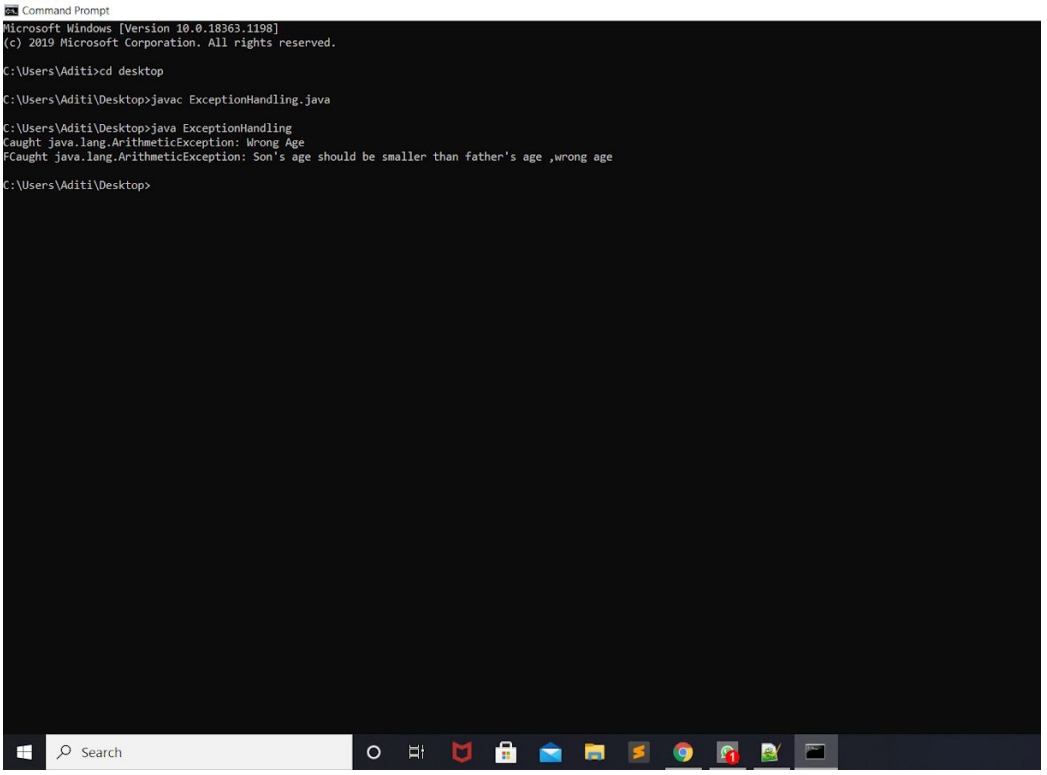
LAB 8

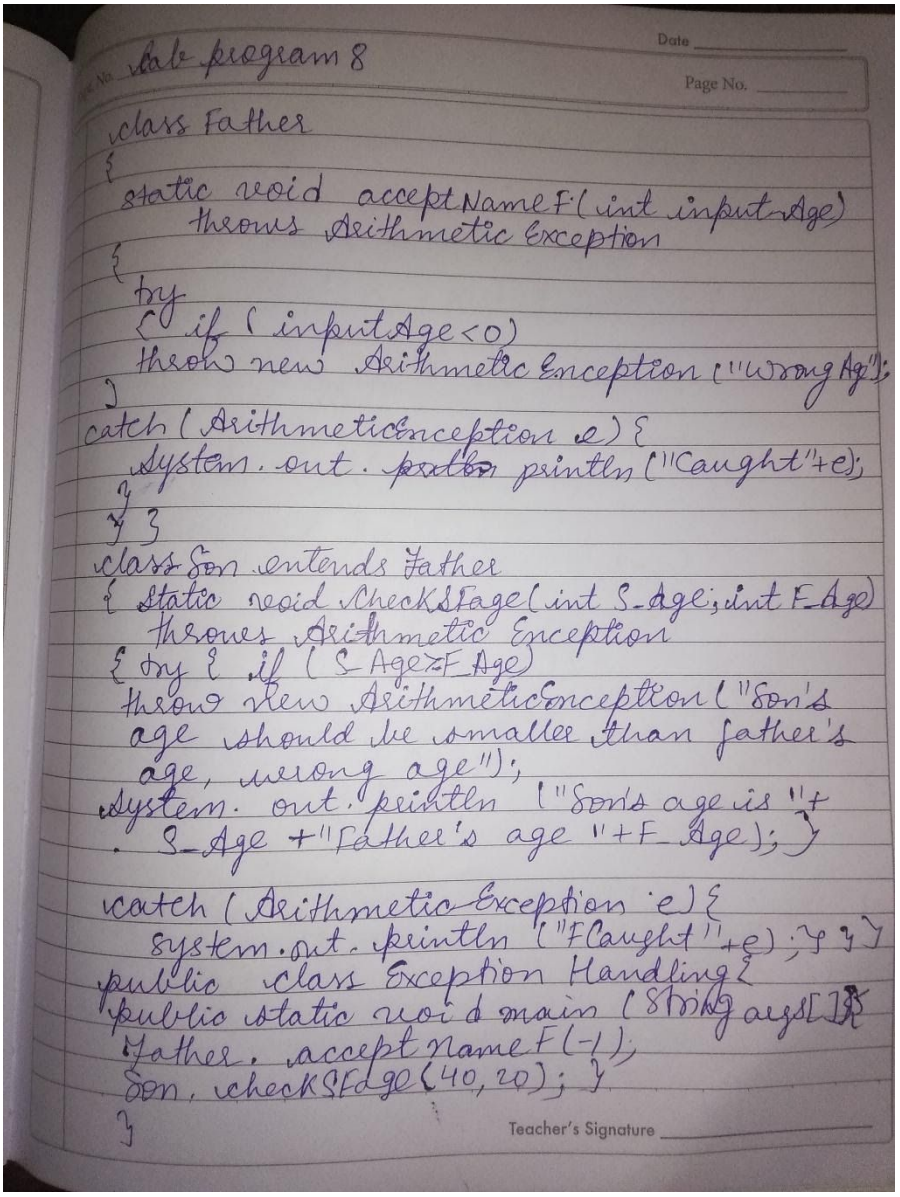
Write a program that demonstrates handling of exceptions in inheritance tree. Create a base class called “Father” and derived class called “Son” which extends the base class. In Father class,implement a constructor which takes the age and throws the exception Wrong Age( ) when the input age=father’s age.

```
Class
Father

          {


          static void acceptNameF(int inputAge) throws ArithmeticException
          {
          try
          {
          if(inputAge<0)
          throw new ArithmeticException("Wrong Age");
          }
          catch (ArithmeticException e) {
          System.out.println("Caught " + e);
          }

          }







          }
          class Son extends Father
          {


          static void CheckSFage(int S_Age, int F_Age) throws
          ArithmeticException


          {
          try{
          if(S_Age>=F_Age)
          throw new ArithmeticException("Son's age should be smaller than
          father's age ,wrong age");
          System.out.println("Son's age is"+S_Age+"Fathers age is "+F_Age);




          }
          catch (ArithmeticException e) {
          System.out.println("FCaught " + e);
          }


          }
          }
          public class ExceptionHandling{
          public static void main(String args[]) {
```

```
Father.acceptNameF(-1);
Son.CheckSFage(40,20);



}
}
```

OUTPUT:





Date

Page No.

Lab program 8

```
class Father
{
 static void acceptNameF(int inputAge)
     throws ArithmeticException
 {
  try
  { if (inputAge<0)
  throw new ArithmeticException("Wrong Age");
 }
catch (ArithmeticException e) {
   System.out.println("Caught"+e);
 }
} }
class Son extends Father
{ static void checkSFage(int S_Age, int F_Age)
   throws ArithmeticException
{ try { if (S_Age>=F_Age)
 throw new ArithmeticException("Son's
   age should be smaller than father's
   age, wrong age");
 System.out.println("Son's age is "+
  S_Age +"Father's age "+F_Age); }
 catch (ArithmeticException e){
   system.out.println("Caught"+e);}}}
public class Exception Handling{
public static void main (String args[])
 Father.acceptNameF(-1);
 Son.checkSFage(40,20); }
}
```

Teacher's Signature

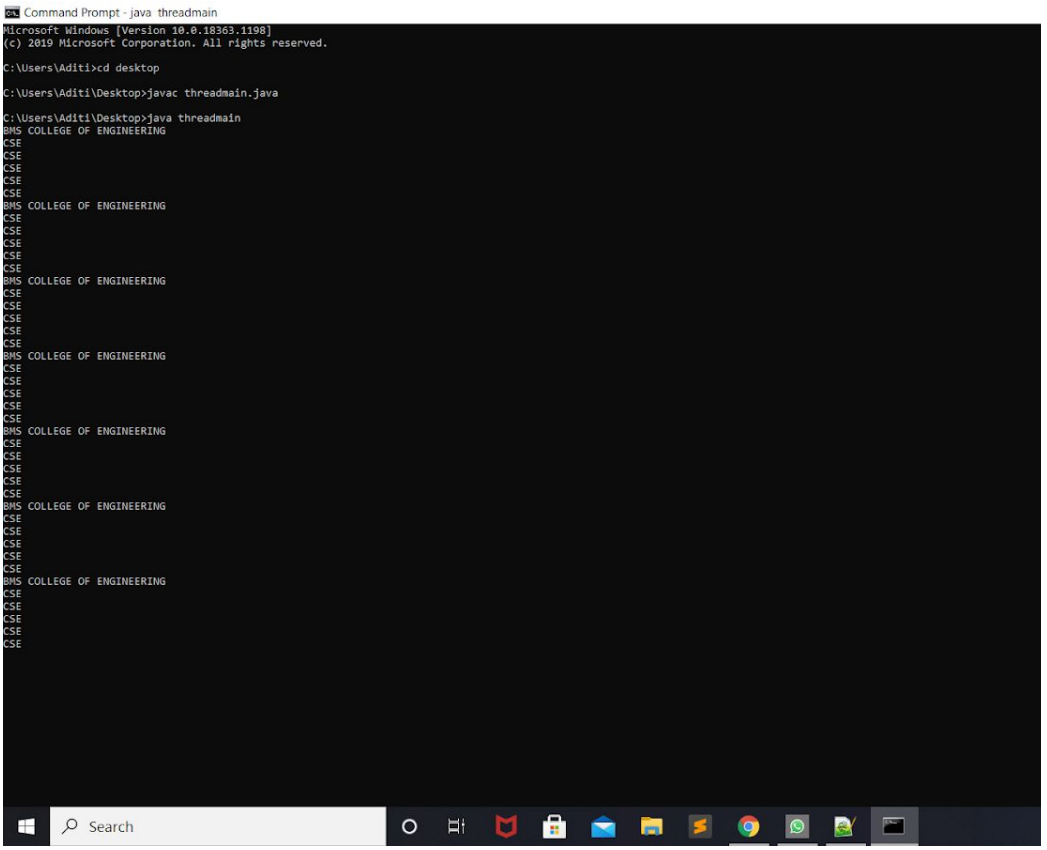
LAB9

Write a program which creates two threads, one thread displaying “BMS College of Engineering” once every ten seconds and another displaying “CSE” once every two seconds.

```
class
Thread1
implement
s
Runnable

                {

                    String name;
                    Thread t;
                    int time;
```

```
    Thread1(String threadname,int time)
       {
      name = threadname;
      this.time=time;
      t = new Thread(this, name);
       t.start();
    }




 public void run()
      {
    try {
    for(int i =100; i > 0; i--)
        {
        System.out.println(name);
        Thread.sleep(time);
      }
        }
             catch (InterruptedException e) {
    System.out.println(name + "Interrupted");
    }
    System.out.println(name + " exiting.");
    }
    }


       class threadmain{
    public static void main(String args[])
       {
    Thread1 t1=new Thread1("BMS COLLEGE OF
ENGINEERING",10000);
    Thread1 t2=new Thread1("CSE",2000);
    }
       }
```

OUTPUT:


Command Prompt - java threadmain
Microsoft Windows [Version 10.0.18363.1198]
(c) 2019 Microsoft Corporation. All rights reserved.
C:\Users\Aditi>cd desktop
C:\Users\Aditi\Desktop>javac threadmain.java
C:\Users\Aditi\Desktop>java threadmain
BMS COLLEGE OF ENGINEERING
CSE
CSE
CSE
CSE
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CSE
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WRITEUP:

Date

Page No.

lab program 9

```
class Thread1 implements Runnable
{
  String name;
  Thread t;
  int itime;
  Thread1(String threadname, int time)
  {
    name = threadname;
    this.time = time;
    t = new Thread(this, name);
    t.start();
  }
public void run() {
try{for(int i =100; i>0; i--)
{
  System.out.println(name);
  Thread.sleep(time);}
}  catch(InterruptedException e){
  system.out.println(name + "Interrupted");
}
  system.out.println(name + "exeting");}
}
  class threadmain{
  public static void main(String args[])
  { Thread t1 = new Thread1("BMS", 10000);
    Thread t2 = new Thread2("CSE", 2000);
  }
}
```

Teacher's Signature

LAB 10

Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a NumberFormatException. If Num2 were Zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box.

```
import
java.aw
t.*;
          import java.awt.event.*;
          public class Divisions extends Frame implements ActionListener
          {
          Dialog d;
          TextField Num1,Num2,result;
          Button Divide;
          public Divisions()
          {
          setLayout(new FlowLayout());
          setSize(500,500);
          Num1=new TextField(10);
          Num2=new TextField(10);
          result=new TextField(10);
          Divide=new Button("DIVIDE ");
          add(new Label("Enter 1st number : "));
          add(Num1);
          add(new Label("Enter 2nd nummber: "));
          add(Num2);
          add(new Label("Result : "));
          add(result);
          add(Divide);
          Divide.addActionListener(this);
          setVisible(true);
          addWindowListener(new MyWindowAdapter());
          }
          public void actionPerformed(ActionEvent ae)
          {
```

```
if(ae.getSource()==Divide)
{ try
{
result.setText(Integer.toString((Integer.parseInt(Num1.getText().tri
m()))/(Integer.parseInt(Num2.
getText().trim()))));
}
catch(ArithmeticException aex)
{ Dia d1=new Dia("Arithmetic Exception");
d1.setVisible(true);
}
catch(NumberFormatException nfe)
{
Dia d2=new Dia("Number Format Exception ");
d2.setVisible(true);
}
}
}
public static void main(String args[])
{
new Divisions();
}
}
class Dia extends Dialog implements ActionListener
{
Button ok;
Dia(String str)
{
super(new Frame(),str,true);
ok=new Button("OK");
setLayout(new FlowLayout());
setSize(300,200);
add(ok);
ok.addActionListener(this);
addWindowListener(new MyWindowAdapter());
}
public void actionPerformed(ActionEvent ae)
{
setVisible(true);
}
class MyWindowAdapter extends WindowAdapter{
public void windowClosing(WindowEvent we)
{
System.exit(0);
}
}
}
```

OUTPUT:


Arithmetic Exception
OK
Enter 1st number :
50
Enter 2nd number :
0
Result :
10


Number Format Exception
OK
Enter 1st number :
Enter 2nd number :
Result :
DIVIDE


Enter 1st number :
50
Enter 2nd number :
5
Result :
10
DIVIDE

WRITEUP:

Date

Pgt. No. Lab Prog 10 Page No.

```
import java.awt.*;
import java.awt.event.*;
public class Divisions extends Frame
  implements ActionListener.
{
  Dialog d;
  TextField Num1, Num2, result;
  Button Divide;
  public Divisions()
  {
  SetLayout (new FlowLayout());
  setsize (500, 500);
  Num1 = new TextField(10);
  Num2 = new TextField(10);
  result = new TextField(10);
  Divide = new Button ("DIVIDE");
  add (new Label ("Enter 1st no."));
    add (Num1);
  add (new Label 2 ("Enter 2nd number"));
  add (Num2);
  add new
  add new Label ("Result");
  add (result);
  add (Divide);
  Divide . addActionListener (this);
  setVisible (true);
  addWindowListener (new MyWindow
      (new MyWindowAdapter());
  }
```

Date

Expt. No. 10 Page No.

```
public void actionPerformed(ActionEvent ae)
{ if (ae.getSource() == Divide)
{ try {
    result.setText(Integer.toString((Integer.parseInt
        (Num1.getText().trim()))/Integer.parseInt
        Num2.getText().trim())); }

Catch Arithmetic Expression
Catch(ArithmeticException aex)
{ Dia d1=new Dia("Arithmetic Exception");
    d1.setVisible(true); }
Catch(NumberFormatException nfe)
{
    Dia d2 = new Dia("NumberFormatExcep
    d2.setVisible(true); }}}

public static void main(String args[])
{ new Divisions(); }}
class Dia extends Dialog implements
    ActionListener {
                Button ok;
                Dia(String str).
{
    super(new Frame(), str, true);
    ok = new Button("OK");
    setLayout(new FlowLayout());
    setSize(200,200);
    add(OK);
```

Teacher's Signature

Date

Expt. No. 10 Page No.

```
ok.addActionListener(this);
addWindowListener(new MyWindowAdapter());
}
public void actionPerformed(ActionEvent ae)
{
setVisible(true);
}
class MyWindowAdapter extends WindowAdapte
{
public void windowClosing(WindowEvent
                                    we)
{System.exit(0);
}
}
}
```

Teacher's Signature

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